Small Business Pulse Survey Estimates by Owner Characteristics and Rural/Urban Designation

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Abstract

In response to requests from policymakers for additional context for Small Business Pulse Survey (SBPS) measures of the impact of COVID-19 on small businesses, we researched developing estimates by owner characteristics and rural/urban locations. Leveraging geographic coding on the Business Register, we create estimates of the effect of the pandemic on small businesses by urban and rural designations. A more challenging exercise entails linking micro-level data from the SBPS with ownership data from the Annual Business Survey (ABS) to create estimates of the effect of the pandemic on small businesses by owner race, sex, ethnicity, and veteran status. Given important differences in survey design and concerns about nonresponse bias, we face significant challenges in producing estimates for owner demographics. We discuss our attempts to meet these challenges and provide discussion about caution that must be used in interpreting the results. The estimates produced for this paper are available for download. Reflecting the Census Bureau's commitment to scientific inquiry and transparency, the micro data from the SBPS will be available to qualified researchers on approved projects in the Federal Statistical Research Data Center network.

[*] Any opinions and conclusions expressed herein are those of the authors and do not represent the views of the U.S. Census Bureau. All results have been reviewed to ensure that no confidential information is disclosed. The Census Bureau has reviewed this data product for unauthorized disclosure of confidential information and has approved the disclosure avoidance practices applied to this release (Approval ID: CBDRB-FY21-026, CBDRB-FY21-073, CBDRB-FY21-291, and CBDRB-FY21-ESMD006-013). The development, testing, fielding, and dissemination of the SBPS represents the work of about 60 Census Bureau staff. We thank David Brown, Carol Caldwell, John Eltinge, John Haltiwanger, Nick Orsini, Michael Ratcliffe, and Jenny Thompson for helpful comments. We thank Luke Streng for his assistance in preparing the research estimates for release.

1. Introduction

Early in the COVID-19 pandemic, the Census Bureau introduced new data products designed to provide timely information about its impact on the U.S. economy and population (Buffington et al. 2021b). One of these new data products is the Small Business Pulse Survey (SBPS) which publishes weekly, timely information on metrics including revenue and employment changes and business sentiment and expectations for small, single-location employer businesses.[2] The ability of the SBPS to provide weekly insights on the differential impacts of the pandemic on small businesses by sector and geography garnered much interest among policymakers and researchers. These stakeholders, which included staff from both the Executive and Legislative branches, were also interested in learning more about differential impacts on businesses based on the demographics of business owners and whether the business is located in urban or rural areas. This paper describes our attempt to respond to these stakeholder requests in a timely fashion by linking the underlying micro-level SBPS data to other Census Bureau data products to provide information on business owners and on urban versus rural locations. We discuss the many challenges in producing this information, provide cautions in interpreting the results, and discuss future research that could improve upon our approach.

To put the SBPS target population in context, it is helpful to consider the magnitudes of businesses contained in the Census Bureau's Business Register (BR). According to the Census Bureau's website, the BR "covers more than 160,000 multi-establishment companies, representing 1.8 million affiliated establishments, 5 million single establishment companies, and nearly 21 million nonemployer businesses."[3] The SBPS target population excludes multi-establishment companies and nonemployer businesses. The exclusion of nonemployer businesses is especially relevant when we turn our attention to owner characteristics. Women-owned and Black-owned businesses are more concentrated in nonemployer than employer businesses. In 2017, Black-owned businesses comprised 2.2% of employer businesses but 11.7% of nonemployer businesses, and women-owned businesses comprised 19.8% of employer

[2] We use small business and establishment here interchangeably as the target population of the SBPS is constrained to single location businesses.
[3] https://www.census.gov/econ/overview/mu0600.html.

businesses but 41.7% of nonemployer businesses.[4] Thus, we need to keep in mind that the "typical" business of these demographic groups is outside the target population of our study.

The SBPS is conducted in nine-week phases and, as of this writing, there have been six phases.[5] This paper focuses on the first three phases of the survey because the bulk of the empirical analyses were carried out while phase 4 was still underway (future work could repeat the analysis in this paper for subsequent phases). The survey generally has about 20 questions with core content appearing in all phases and rotating content as needs develop. The core content provides information on business sentiment, business expectations, supply chain disruptions, operations (changes in revenue, employment, and hours), and receipt of federal financial assistance. Rotating content includes questions such as about changes in telework for employees or changes in processes and delivery modes.

We highlight a few findings from Buffington et al. (2021a) for Phases 1-3 of the SBPS to provide context and motivation for our empirical exercises.[6] Starting with temporal variation, they find that business sentiment, business expectations, and operational changes reveal large negative impacts on small businesses over all three phases but with some improvement in Phase 1, stalling in Phase 2, and worsening in Phase 3. They also find that shares of businesses experiencing revenue changes are much larger than shares of businesses experiencing employment changes suggesting that there may be some labor hoarding. In addition, shares of businesses adjusting hours is larger than that adjusting employment (but smaller than that adjusting revenue).

While all sectors of the economy are negatively impacted, Buffington et al. (2021a) highlight that some sectors were more negatively impacted than others as measured over multiple metrics. They find that these differences are persistent over time and that dispersion increased over time. They focus on two sectors, Accommodation and Food Services and Finance and Insurance, to illustrate characteristics of sectoral variation. Relative to small businesses in Finance and Insurance, a higher percentage of small businesses in Accommodation and Food Services face a large negative impact from the pandemic. For example, by the end of the third phase (early January 2021), 64.9% of businesses in Accommodation and Food Services report a

[4] Source: Annual Business Survey 2018 and Nonemployer Demographic Statistics; see Tables 2 and 4.
[5] The timing of the phases is as follows: (1) April-June 2020; (2) August-October 2020; (3) November 2020-January 2021; (4) February-April 2021; (5) May-July 2021 (6) August-October 2021.
[6] We focus on the first three phases of the SBPS in this paper.

large negative effect as compared to 13.7% of business in Finance and Insurance. Similarly, in this last week of Phase 3, 56.1% of businesses in Accommodation and Food Services saw a decrease in revenue as compared to 22.1% in Finance and Insurance.

In terms of the geographic impact, Buffington et al. (2021a) find that state-level variation in overall impact is not as persistent as sectoral-level variation nor as large. They conclude that it may be that state level is not always the most appropriate level for this type of analysis since the presence of a large aggregate shock may overwhelm local shocks.[7] Moreover, local shocks may be specific to a county or metropolitan statistical area (MSA) and thus may not show up in the state data. When there are state-level shocks, we see state-level variation in SBPS measures that correlate with these state-level shocks (a good example is the power outages in Texas in early 2021).[8]

As the results from SBPS were published, several stakeholders reached out to the Census Bureau requesting supplemental information on the demographic characteristics of business owners and rural versus urban locations. Recognizing the importance of providing timely data during a pandemic, we began research into how this information could be incorporated with SBPS results. Our goals are to leverage Census Bureau expertise to ensure that appropriate care is taken with respect to methodology, produce summary data by linking SBPS micro-level data to other Census Bureau micro-level data, and release the resulting product with detailed documentation on the limitations of these estimates. More generally, this research supports Census Bureau efforts to leverage existing data holdings to produce new products without imposing additional respondent burden.

This paper provides a detailed examination of the challenges inherent in this exercise and our attempt to provide timely information with transparency and robust discussion of caveats to enable informed use of the supplemental information. Much of the paper provides detailed information on the challenges in linking SBPS micro-level data with other Census Bureau assets in order to provide this information. Given these challenges, we note the importance of future

[7] This is not to say that variation in state policies related to the pandemic did not play a role in the dispersion observed across states. However, if the sectors that are hardest hit by the pandemic (e.g. Accommodation and Food Services) account for similar shares of economic activity across states, the sectoral variation could be more prominent than the variation across states.

[8] As one such example, while the national average for small businesses with temporary closures was less than 3%, the average for Texas rose from 2.3% in early January to 15.1% by the end of February before falling back down to 1.2% by mid-March. Note that this example occurred during phase 4 of the SBPS which is not considered in the remainder of this paper.

research into issues concerning sample selection for one of our main datasets. We show some results from this linking and also conduct some empirical exercises using micro-level data that provide greater context to the new data product by allowing us to control for characteristics through regression analysis.

The paper proceeds as follows. Section 2 provides a short discussion of related measurement efforts. Sections 3-5 discuss each of the three datasets that we use and how we link them together. Section 6 presents results from the research public data product. Section 7 presents results from empirical exercises using micro-level data. Section 8 provides concluding remarks including discussion of potential future directions.

2. Related Measurement Efforts

We highlight some related efforts to measure the impact of the COVID-19 pandemic on businesses by business owner demographics and location. Starting with surveys of small businesses, McKinsey conducted a "COVID-19 US Small and Midsize Business Financial Pulse Survey" in early May 2020. With about 1,000 respondents, they found a higher percentage of minority-owned businesses had difficulties accessing credit (42% as compared to 29% for all respondents) and were "extremely" or "very concerned" about the financial viability of their business (58% as compared to 47% for all respondents). A US Chamber of Commerce survey of 500 small businesses conducted with MetLife in July 2020 found minority-owned businesses had a harder time securing loans for aid: 13% of minority-owned businesses reported troubles compared to 8% of non-minority-owned businesses. Two-thirds of minority-owned businesses are concerned about having to permanently close, whereas 57% of non-minority-owned businesses are. In another report based on the same survey, the proportion of male-owned businesses reporting the overall health of their business as good declined from 67% to 62% before and after the coronavirus pandemic hit, while for women-owned businesses that proportion declined more steeply from 60% to 47%[9]. Alekseev et al. (2020) utilize a sample of

[9] See MetLife & U.S. Chamber of Commerce Special Report on Race and Inequality on Main Street | U.S. Chamber of Commerce and Special Report on Women-Owned Small Businesses During COVID-19 | U.S. Chamber of Commerce

66,000 respondents from an online Facebook survey sent between April 20 – 28, 2020. In the sample, 47.4% of majority-female firms decreased the size of their workforce, while 40.6% of majority-male firms did so. Respondents from majority-female firms were more likely to also report difficulties with tasks associated with their household, such as taking care of other household members.

Fairlie (2020) compares the February and April 2020 data releases from the Current Population Survey (CPS) to assess the impact of COVID-19 on small business operation. The number of active small business owners declined from 15 million in February to 11.7 million people in April, a 22 percent decline. Looking deeper into this decline, the number of black business owners fell by 41 percent, the number of Latino business owners declined by 32 percent, and the number of Asian business owners declined by 26 percent, all greater than average declines. Mills and Battisto (2020) combined data from the 2019 Small Business Credit Survey (SBCS), the 2012 Census Survey of Business Owners, and SBA Paycheck Protection Program Loan Level Data to assess the role of geography in COVID impacts; they found that Black-owned businesses are more likely to be concentrated in COVID-19 hotspots and less likely to be covered by Paycheck Protection Program (PPP) loans.

Liu and Parilla (2020), in a report from the Brookings Institution, further detail underlying financial issues that have faced minority-owned businesses, finding that in majority-Black neighborhoods, 80% of loans to nonemployer small businesses were issued by financial technology or online lending companies. Liu and Parilla (2020) also find that issues exist in getting PPP loan coverage out to Black neighborhoods, noting that small businesses in majority-Black neighborhoods in Washington DC waited on average 37 days for PPP assistance, 10 days more than small businesses in majority-white neighborhoods. Fairlie and Fossen (2021) use administrative data for PPP and Economic Injury Disaster Loan (EIDL) and find mixed results with respect to the relationship between minority-owned businesses and receipt of COVID-19 financial aid. Their analysis shows that PPP funds flowed to majority-minority areas of the U.S. at a slower than average rate, but that EIDL funds and receipt were more strongly positively associated with minority communities. The 2021 Report on Employer Firms, published by the Federal Reserve System as part of its Small Business Credit Survey, finds differential impacts by race on business outlook, with 79% and 77% of Asian and Black-owned firms, respectively,

describing their financial outlook as "fair" or "poor", compared to 57% of all survey participants. Black- and Asian-owned businesses also differ in their primary challenge facing their businesses, with Asian-owned firms most likely to report "weak demand for products and services" and Black-owned firms most likely to report "credit availability" as a challenge.

These papers have used different sampling frames and methods to assess the economic impacts of the COVID-19 pandemic. In this paper we attempt to complement these efforts by combining existing Census Bureau data products with the Small Business Pulse Survey in order to provide more detail about urban and rural small businesses and small businesses by demographics of the owners (race, ethnicity, sex, and veteran status). By providing detailed information about the data and our methodology, we allow users to determine the fitness for use of our estimates for their needs.

3. Small Business Pulse Survey Data

The SBPS target population is all single-location businesses with 1-499 employees and $1,000 or more in revenue; all active businesses that reported an email address in the 2017 Economic Census comprise the full SBPS collection set. About a million businesses meet this requirement. The sample is divided equally across the nine weeks of each phase of the survey, so that about 100,000 businesses are asked to participate in the survey each week.[10] The response rate is about 25% leading to about 25,000 businesses per week which gives us a total of about 621,000 responses across the three nine-week survey phases. Respondents are eligible to participate in each phase, so the total number of responses includes some small businesses that appear in our response set up to three times. Overall, we have about 350,000 unique businesses in our sample and 621,000 total responses. Breaking this down by number of appearances: 165,000 businesses responded once, 102,000 responded twice, and 84,000 responded three times. The survey is designed to be representative[11] and the results are weighted[12] to be representative

[10] Subsamples are not reused within a phase but are reused across phases so some businesses may respond in multiple phases.
[11] Roughly 1.7 million single-establishment employer businesses were in scope to receive the 2017 Economic Census, and of those approximately 1.1 million had between 1-499 employees and reported a valid email address. These comprise the SBPS target population and are representative of over 6 million businesses.
[12] Though the SBPS is not a sample survey, weights are used to reflect the full population. These weights are adjusted weekly to correct for sample non-response.

at the national and state by sector levels. Note that published subsector and MSA estimates as well as these new estimates by owner characteristics and location described in this paper are not used in the creation of weights or their adjustment and therefore these estimates should be viewed with appropriate caution.

With a response rate of 25%, we are naturally concerned about non-response bias when interpreting results from the SBPS. Moreover, we are also concerned with survival bias as the survey extends over time (and especially as it extends over time during a pandemic-induced recession). Buffington et al. (2021a) discuss many of these issues, but to these we add concerns that the non-response bias may be correlated with some of the characteristics that we study in this paper.

The SBPS starts by asking the respondent to confirm Employer Identification Number (EIN); if the pre-printed EIN is incorrect, the respondent is asked to provide the correct EIN. As will be evident when we discuss linking the SBPS to other data sources, the EIN is critical to our ability to leverage existing Census Bureau information on the business. We now provide some detail on the five questions comprising the core content: business sentiment; changes in revenue, employment, and hours; and business expectations.

Business sentiment is collected through the question: "Overall, how has this business been affected by the Coronavirus pandemic?" with checkbox responses: large negative, negative, no effect, positive, and large positive. The question allows the business to provide a holistic assessment of the impact on their business, without constraining the response to a specific time frame since the start of the pandemic. We also focus on three questions which share the same basic format for three concepts: revenue, employment, and employee hours. For example, the revenue question: "In the last week, did this business have a change in operating revenues/sales/receipts, not including any financial assistance or loans?" with checkbox responses: "Yes, increased," "Yes, decreased," and "No." These questions refer to a specific time frame (prior week) for the response. The SBPS also asks respondents for their expectations for their business: "In your opinion, how much time do you think will pass before this business returns to its normal level of operations relative to one year ago?" The responses include little/no effect, already back to normal, to varying durations (1 month or less up to more than 6 months),

to never and closed.[13] The response is not constrained to a specific time frame, but the comparison is always relative to the previous year, a moving window which allows expectations to evolve over time.

With access to the micro data, it is possible to learn more about the relationships between these five concepts. We would expect there to be some strong positive relationships between the overall impact, changes in revenue, and expectations. We find that overall impact and revenue changes are positively correlated[14] (0.262). The fact that the correlation is not higher partially reflects the difference in timing of the two question (recall overall impact has an open-ended time frame, while change in revenue concerns the last week). It also suggests that businesses are considering other factors in assessing the overall impact on the business (for example, whether the business can remain open and retain employees). We also find that overall impact and expectations are positively correlated (0.523). This correlation is higher than for revenue, suggesting that these additional factors that are used to assess overall impact are also important in developing expectations. Turning to the relationship between employment and hours, perhaps not surprisingly, the changes in employment and hours are positively correlated (0.499). As noted earlier, Buffington et al. (2021) find that the share of businesses changing hours generally exceeds the share of businesses changing employment (and both are concentrated on negative changes).

It is less clear a priori what the relationship between changes in revenue and changes in employment (and hours) would be. For example, employment and hours could be decreasing (even in the face of rising revenue) due to increasing labor productivity (possibly by relying more heavily on technology). On the other hand, we might see revenue decreasing and employment and hours holding steady, possibly reflecting labor hoarding. Given the publicly available results, we know that most changes are for revenue declines and that shares in businesses with declines in hours follow this pattern (as do changes in employment to a lesser extent). Thus, it is not surprising that the correlation between revenue changes and changes in employment and hours are positive and that the correlation is higher for hours (0.379 versus

[13] While the question appears in some form in all phases, changes were made to the question and responses over time. In the fourth week of Phase 1, the question adds "relative to one year ago" and "usual" is replaced by "normal." At the start of Phase 2, "This business has returned to its normal level of operations" and "This business has permanently closed" are added as responses (see Buffington et al. 2021a for more discussion).
[14] Correlations are weighted using the SBPS tabulation weights.

0.254). Finally, the smallest correlation in this set is between employment and expectations (0.125), suggesting that there is a wedge of some sort between changes in employment and expectations for when their business will get back to normal. Unfortunately, we do not have a "normal" time period to compare to these results.[15]

We dig a little deeper into the responses for changes in revenue and changes in employment to understand a bit more about this relationship. We do a simple decomposition of the changes in revenue and employment (Up, Down, No Change) where we consider a 3x3 matrix of outcomes for these two variables. The largest share of responses is in the cell on the diagonal of "No Change" for both revenue and employment. This cell accounts for more than one-third of all observations. The cell with the second largest share is the off-diagonal element where revenue is "Down" but employment is "No Change." This cell accounts for slightly more than one-third of all observations. The importance of this off-diagonal cell provides some evidence of labor hoarding. In fact, small businesses with declining revenue were more than three times more likely not to change employment than to decrease employment. In the regression results below, we examine the extent to which this possible labor hoarding is correlated with receipt of PPP loans.

4. Firm Characteristics: Urban/Rural Designation

The Census Bureau maintains a database of businesses in the United States called the Business Register which it continually updates with data from Economic Censuses, surveys, and administrative data. Our Geography Division provides geographic codes ('geocodes') for establishment addresses in the Business Register. Both the physical address of the establishment and the mailing address of the establishment are geocoded to include a rural/urban flag. Because mailing addresses do not necessarily reflect the location where business is conducted, the SBPS tabulations using urban and rural designations are based on the physical address of the business. Furthermore, establishment geocoding is more successful for physical addresses.

The Census Bureau defines urban areas based on the results of the most recent Decennial Census. Urban areas are "urbanized areas of 50,000 or more population and urban clusters of at

[15] Analysis of another Census Bureau collection suggests that business expectations for manufacturing plants are correlated with actual outcomes in normal times (see Davis et al. (2020)).

least 2,500 and less than 50,000 population.''[16] Areas that lie outside of urban areas are considered rural; Figure 1 presents a map of urbanized areas and urban clusters. Note that these estimates are consistent with the Census Bureau's 2010 urban-rural designations, but that there is no consistent urban-rural designation across federal agencies.[17,18] Thus, our measure is consistent with standard Census Bureau usage, but we draw the reader's attention to the caveat that the designation is now based on older data and may not reflect changes resulting from continued urban development over the course of the decade

Once rural/urban flags are assigned to SBPS responses, estimates and their standard errors are calculated using the SBPS survey estimates methodology.[19] Weekly estimates are constructed for each week of the first three phases of the SBPS. For each question asked on the SBPS, estimates are calculated as the percent of businesses responding to each answer such that for any given question responses sum to 100%. SBPS tabulation weights are used in the construction of the estimates. Standard errors are calculated using the delete-a-group jack knife estimation. About 80% of small businesses in the target population of the SPBS have physical locations that are geocoded urban; about 10% are rural and about 10% are not classified.[20] The distribution of responses, both unweighted and weighted, is very similar to the distribution of the businesses in the target population of the SBPS. (Sample weights are used for the target population, and tabulation weights are used for the responses.)

Table 1 presents the distribution of responses to the SBPS by sector overall as well as by urban and rural designations using the physical location of the business. Distributions are constructed using survey tabulation weights for each phase, then averaged across the three phases. The distribution of urban businesses by sector is very similar to the national distribution, as most businesses (80%) in the SBPS are classified as urban. Notable differences are that there

[16] See https://www.federalregister.gov/documents/2011/08/24/2011-21647/urban-area-criteria-for-the-2010-census
[17] For information on Census Bureau urban-rural designation see Ratcliffe et al (2016).
[18] For example, the Economic Research Service, Department of Agriculture uses a metro/nonmetro county designation as well as additionally refined measures of rurality; recent work by Bucholz, Molfino, and Kolko (2020) apply machine learning to survey data to predict the likelihood of the average household in a census tract describing their location as rural, urban, or suburban.
[19] See the SBPS Methodology at https://portal.census.gov/pulse/data/#methodology.
[20] These can be compared with the results from the Small Business Credit Survey (SBCS) for reference year 2019 but with the caveat that the SBCS uses the 2016 Annual Survey of Entrepreneurs to reweight their results by demographics (see page 31 of their report). Thus, with the caveat that the SBCS uses Census Bureau data to re-weight their results, this can be compared to the SBCS which finds 84% of small businesses are urban and 16% are rural in 2019.

are fewer urban respondents in Construction (23) and more in Professional, Scientific, and Technical Services (54) and Health Care and Social Assistance (62).

Rural differences are much larger: the share of rural businesses in Construction (23), at 23.2%, is nearly double the national share of 12.9% and is the largest sector for rural businesses. As a share, there are fewer rural businesses in Finance and Insurance (52); Professional, Scientific, and Technical Services (54); and Health Care and Social Assistance (62).

Over phases 1-3, small businesses in construction fared relatively better than small businesses in health care and social services in terms of overall impact and revenue. Thus, we might expect that these sectoral differences would lead to relatively better outcomes for small businesses in rural areas, but going against this tendency is the larger share of urban small businesses in finance and insurance and professional, scientific, and technical services, which also had relatively better outcomes.

5. Owner Characteristics: Sex, Race, Ethnicity, Veteran Status

The Annual Business Survey (ABS), conducted by the Census Bureau in partnership with the National Center for Science and Engineering Statistics within the National Science Foundation, produces data on employer businesses by sex, race, ethnicity and veteran status of owners across all non-farm sectors of the economy. The ABS was first conducted for reference period 2017, however researchers have used its precursors to study owner characteristics and business outcomes. For example, Brown et al. (2019) use information on race, ethnicity, and gender from the Survey of Business Owners when examining high-growth businesses. Fairlie and Robb examine differences by race (2007) and gender (2009) using the Characteristics of Business Owners.

The main race categories used by the ABS for publication are American Indian or Alaska Native (AIAN), Asian, Black or African American, Native Hawaiian or Other Pacific Islander (NHOPI) and White.[21,22] Not all businesses are classified by ownership characteristics

[21] The ABS collects more detailed race data but publishes using only these five categories in non-Economic Census years. See, e.g., the 2020 ABS questionnaire for additional details.
[22] The race and ethnicity categories used by the ABS and this paper are based on the Office of Management and Budget Statistical Policy Directive 15.

in the ABS; this includes publicly-held businesses as well as those not classifiable because a majority ownership share does not exist. Differences between the totals produced in the ABS and the detailed breakout by owner characteristics represent these not classified businesses. Businesses may be classified in more than one race category if the owner(s) report more than one race.

Because businesses may have more than one owner, the share of the business owned by persons that are the same sex, race, or ethnicity across owners are used to calculate ownership by these characteristics; data are collected for up to four owners. Ownership of a business by a given characteristic requires ownership of more than 50% by owners reporting that characteristic.[23] Note that race and ethnicity are not mutually exclusive, and owners may be more than one race in addition to (non-)Hispanic. For example, if a business has four owners with equal ownership shares and three owners are Black and Hispanic, the business is classified as both Black owned as well as Hispanic owned, as the share of the business owned by Black owners and Hispanic owners (75%) exceeds 50%. If a business has one female owner and one male owner with equal ownership shares, the business is classified as equally owned by sex, and similarly if a business is owned equally by Hispanic and non-Hispanic owners the business is classified equally owned by ethnicity. ABS data are published by each of these statuses - majority owned and equally owned - for sex, ethnicity, veteran status, and minority/non-minority ownership. ABS data are published only for majority owned by race.

Overall, the 2018 ABS surveyed over 800,000 businesses and the 2019 ABS surveyed over 300,000 businesses. The published results for businesses with less than 500 employees from the 2018 and 2019 ABS are shown in Table 2; note that is not directly comparable to the SBPS because of the differences in scope between the ABS and the SBPS (the published ABS data include multi-unit employer businesses). We have reproduced Table 2 using the ABS data for only businesses in-scope for the SBPS and find similar results to column 2; however, given the small number of multi-unit businesses in some of the owner characteristics categories we cannot publish the table.

[23] See Brown et al. (2019) for a different way to assign ownership. They use firm-owner observations, weighted by their ownership shares. Their method produces estimates more reflective of the equity distribution among the top four owners which may matter if only owner groups with a majority of equity influence firm behavior.

The demographics by sex for the business owner(s) using the 2019 ABS are: 61.2% male, 19.8% female, and 15.0% equally owned. In terms of race, 83.0% are White, 10.3% Asian, 2.2% Black, and less than 1% for AIAN. In terms of ethnicity, 5.8% are Hispanic and 89.2% are non-Hispanic. Finally, 87.5% are non-Veteran owned.[24] For NHOPI and Veteran-owned businesses, we must rely on the 2018 publication due to suppressions; less than 1% are NHOPI owned and 6.1% are Veteran owned.

By matching ABS survey data to the Small Business Pulse Survey (SBPS) responses, it is possible to generate SBPS estimates by these owner characteristics. The 2018 and 2019 ABS matched responses are used to construct ownership characteristics for the matched SPBS responses. As noted above, the 2018 ABS surveyed over 800,000 businesses, resulting in the largest possible number of responding businesses for matching; additional years of the ABS that resample businesses that responded in 2018 are not asked the owner characteristics questions. SBPS responses not matched to the 2018 ABS are matched to the 2019 ABS (which recall surveyed over 300,000 businesses).

The SBPS survey estimates by owner characteristics are the result of matching SBPS response data to the 2018 and 2019 ABS survey data.[25] Unique business identifiers are used to match the SBPS and ABS response files. Using phase 1 data, approximately 28% of SBPS responses are matched to the ABS; match rates for subsequent phases are similar. (The SBPS has an average response rate of about 25%; thus, our matched sample on a non-weighted basis is about 7% of the SBPS target population). Ownership shares and sex, race, ethnicity, and veteran status values from the ABS are assigned to SBPS reporters. Majority ownership is calculated using the same methodology as the ABS; an ownership share of more than 50% in total for a given sex, race, ethnicity, or veteran status is required for the firm to be considered owned by that sex, race, ethnicity, or veteran status. Businesses may be included in multiple race categories as in addition to sex, ethnicity, and veteran status categories. If no majority sex, race,

[24] Again, with the with the caveat that the SBCS uses Census Bureau data to re-weight their results, we can compare to the SBCS. The gender breakdown for the SBCS is: 65% male, 21% female, and 15% equally owned. The SBCS combines race and ethnicity and reports: 82% Non-Hispanic White, 11% Non-Hispanic Asian, 5% Hispanic, and 2% Non-Hispanic Black or African American.
https://www.fedsmallbusiness.org/medialibrary/FedSmallBusiness/files/2020/2020-sbcs-employer-businesses-report
[25] The SBPS mail file was drawn from the 2018 Business Register (BR); the 2018 (2019) ABS sample was drawn from the 2016 (2017) BR, likely leading to a lower match rate than if all were drawn from the same BR year.

ethnicity, or veteran status ownership can be established, or the SBPS records cannot be matched to the ABS, these are considered not classified and are not included in the owner characteristics estimates.[26]

For the SBPS-ABS matched file, once owner characteristics flags are created using the above methodology, estimates and standard errors for the estimates are created using the SBPS survey estimates methodology.[27] Estimates consist of the weighted percent of businesses responding to each answer for each question on the SBPS, produced for each week of the SPBS phases 1 - 3. Weights used for these tabulations are the SBPS weights adjusted for survey non-response. Standard errors are calculated using the delete-a-group jack knife estimation. Estimates for release include those by sex (female, male, Equally owned), race (AIAN, Asian, Black or African American, NHOPI, White), ethnicity (Hispanic, non-Hispanic), and veteran status (Veteran, Non-Veteran).

The use of the SBPS tabulation weights to create estimates by owner characteristics necessitates additional caution when interpreting estimates and micro data-based results, as the underlying data is the result of combining two samples with different target populations and strata; results based on this matched data may not be applicable to the larger universe. Ideally, our matched sample would be adjusted to the true target population for each owner characteristic (i.e., we would know the ownership characteristics for all single unit small employer businesses that existed at least as far back as 2017 and would adjust our weights such that our sample was representative at the national level by these characteristics). While initial research is being done at the Census Bureau to assign these characteristics to all businesses on the Business Register, we cannot do this weight adjustment at this time.

Using the ABS-SBPS matched responses, weighted shares of SBPS businesses by sex, race and ethnicity are calculated and presented in Table 3. Shares are constructed for each phase and then averaged for phases 1-3. Following the ABS, firm ownership by sex, race and ethnicity is defined as businesses having a majority ownership (>50%) by owner(s) belonging to a sex, race, ethnicity, or veteran status. Race and ethnicity are not mutually exclusive and thus owners

[26] Thus, this differs from Brown et al. (2019) since their method of assigning ownership can classify businesses without majority status.
[27] See the SBPS Methodology at https://portal.census.gov/pulse/data/#methodology. The ABS methodology is available at Annual Business Survey Methodology (census.gov)

may be more than one race in addition to (non-) Hispanic. Table 3 also includes the share of businesses in these matched sets that cannot be assigned to a majority ownership category using the reported ABS characteristics and ownership shares.

Table 3 can be used to compare the classification of SBPS/ABS matches to published 2018 and 2019 ABS totals. Note that Table 3 includes national estimates for all employer businesses with fewer than 500 employees, not just the *single unit* employer businesses with fewer than 500 employees that are the target population of the SBPS. While we are not releasing additional tabulations due to concerns about disclosure, we have constructed these estimates selecting only single unit firms and found a distribution similar to the published estimates reproduced here.

Businesses found in the SBPS-ABS matches found in Table 3 are less likely to be female-owned, male-owned, or equally-owned by sex than the businesses in the published ABS data, and more likely to not be classified by sex. Businesses in the SBPS-ABS matches found in Table 3 are more likely to be not classified by race than in the published ABS results, with almost all categories of firm ownership by specified race being lower for SBPS matched businesses than in the published ABS. SBPS matched businesses are less likely to be Hispanic or Non-Hispanic and more likely to be not classified by ethnicity. Last, SBPS matched businesses are less likely to be Veteran or non-Veteran owned, and there are no businesses in the matched file that are equally Veteran and non-Veteran owned.

Table 4 provides nonemployer data by owner characteristics for comparison to demonstrate important differences between small employer businesses, the target of the SBPS, and nonemployers. First, there are far more (nearly five times) the number of nonemployer businesses than employer businesses. Second, nonemployer businesses are far more likely than small employer businesses to be female-, Black-, or Hispanic-owned. Thus, the SBPS has a limited ability to reflect the experience of minority-owned businesses as the majority of minority-owned businesses are nonemployers.

Table 5 compares the representativeness by sector of the SBPS-ABS matched data relative to the SBPS responses. Shares are constructed for each phase and then averaged for phases 1-3. The SBPS-ABS matched responses are less likely to be in Construction (23), Retail (44), and Food and Accommodation (72) and more likely to be in Manufacturing (31) and Wholesale (42)

than the SBPS overall responses (which are adjusted to be representative of the survey's target population nationally and at the sector level).

6. Research Data Product

We start by describing the results as provided in the public-use files. Since Buffington et al. (2021a) find important sectoral differences for small businesses, ideally, we would provide each of the characteristics of interest by sector (and by state). However, the sample sizes that we have seen above for our characteristics do not support such a plan. Instead, published estimates for each question (and standard errors) are provided at the National level by owner characteristics as well as by rural and urban location. These are less than ideal but still provide useful information. We attempt to provide some metrics of their use when we turn to using microdata in Section 7. The option of using micro data is available to qualified researchers on approved projects through the FSRDC. In the time of a fast-moving pandemic (or other similar emergency), many interested parties are not in a position to undertake research in the FSRDC, so it is our hope that the data provided will fill some needs.

Before we turn to the results, we note that not all differences are statistically significant between groups or over time and may reflect survey error and not real economic differences. Caution should be used in interpreting differences in estimates either between groups or across time; Appendix C provides guidance for evaluating differences between these published estimates. We note how some of these results are robust to controls such as sectors, while others are not (which we demonstrate in Section 7).

Caution is also warranted since it is not clear what role the sample selection issues play in these results. The matched SPBS-ABS sample used here is not representative nationally for race, sex, ethnicity, or veteran status of ownership; for example, our matched sample has only about half of the share of black owned businesses expected (2.1 vs. 1.1 percent according to Table 3). Future research on the sample selection issues with the matched sample used here is needed to understand the impact on the results found in the remainder of this paper. Understanding and

resolving these issues may be contingent on more general research assigning ownership characteristics to the Business Register.

To preview our results, we find most of the differences by owners are concentrated in the negative and more neutral outcomes. Since our focus is on changes in revenue, this means that we see the largest differences for decreases in revenue or no change in revenue.[28] In contrast, the differences for increases in revenue tend to be smaller. (Similarly, the biggest differences for overall sentiment are usually in large negative impact or no impact.) This is not surprising given the near universal experience of negative outcomes from the pandemic. Time series plots for all five core questions appear in Appendices A (location) and B (owner characteristics). In the interest of space, we only reproduce figures for revenue changes in the body of the paper (but discuss all results).

We start by discussing results by location. Figure 2 shows the changes in revenue over all three phases by National (blue solid line), Rural (red dashed line), and Urban (green dash-dot line). Small businesses in rural relative to urban have better outcomes in terms of a smaller share facing declining revenues (top panel) and a larger share facing no change in revenues (middle panel) but are relatively similar for shares with increasing revenues (bottom panel). The outcomes for positive impacts and moderate negative impact are not very different than those for urban. We see a similar pattern for employment changes but with less variation across the location types (and even less variation for hours changes). In terms of overall sentiment, small businesses in rural locations relative to urban locations have better outcomes in terms of having a smaller share with large negative impact and a larger share with no impact. Finally, not surprisingly, small businesses in rural areas have more optimistic expectations than do small businesses in urban areas as measured by smaller share of rural businesses choosing the longest horizon for a return to normal and having a larger share choosing little or no effect or already returned to normal.

We now look at results by owner characteristics starting with sex. We reemphasize that ownership of a business by a given characteristic requires ownership of more than 50% by

[28] Since one the three categories of shares of responses for revenue changes has very small numbers, the remaining two numbers almost mechanically offset each other. This relationship is not as mechanical for overall impact where there are five choices and the gaps are largest for "large negative impact" and "little or no impact."

owners reporting that characteristic. Figure 3 shows revenue change over all three phases for National (blue solid line), businesses owned by females (red dashed lines), and businesses owned by males (green dash-dot lines). Small businesses owned by females relative to those owned by males have higher shares reporting a decline in revenue (top panel) and a lower share reporting no change in revenue (middle panel). This pattern is repeated for employment and hours (but with smaller gaps between male-owned and female-owned businesses). In terms of overall sentiment, relative to small businesses owned by males, small businesses owned by females have a higher share reporting large negative impact and a lower share reporting little or no effect. Finally, small businesses owned by females have less optimistic expectations than those owned by males in terms of having higher shares expecting a return to normal over the longest horizon (6 or more months) and smaller shares having had little or no effect.

Now, we turn to race starting with American Indian and Alaskan Native (AIAN)-owned businesses in Figure 4. One notable feature of Figure 4 is the volatility of the shares of small AIAN-owned businesses percentages over all three possible responses for revenue change. For example, the percent of small AIAN-owned businesses with decreases in revenue in the last week is about 80% in mid-May, is below 40% in mid-June, and is close to 60% by the end of June. This volatility reflects the small sample size of this group in our matched sample. This underscores the importance of using the confidence intervals when using the estimates.

Turning to small Asian-owned businesses, in Figure 5 we see that relative to the national average, these businesses have a higher percentage of businesses with declining revenue (and that this gap appears to be largest in phase 2). In the same vein, there is a smaller percentage of small Asian-owned businesses with no change in revenue relative to National (and again, this gap appears to be largest in phase 2). Finally, there is a smaller percentage of small Asian-owned businesses in phase 1 with increases in revenue as compared to National. This is one of the few groups where we can see a gap on the increase side. In terms of the overall impact, relative to National, small Asian-owned businesses have a large percentage with a large negative effect but a smaller percentage with a moderate negative effect (the percentages with no effect is volatile and the percentages with moderate effect are similar to National).

Small Black-owned businesses are shown in Figure 6 which plots the percent of small businesses by changes in revenue. All three responses show large volatility over the three phases,

likely reflecting the small sample size. If one instead focuses on labor market outcomes, there is a clear pattern in phase 1 of small Black-owned businesses having both a larger percentage of businesses with declines in hours and employment and a smaller percentage of businesses with no change in hours and employment relative to National (see figures in Appendix B).

Figure 7 presents the results for Native Hawaiian and Other Pacific Islander (NHOPI)-owned businesses. The results for NHOPI-owned businesses are very volatile over all three response categories for revenue. Again, this likely reflects the very small sample for small NHOPI-owned businesses in our matched sample. The gaps in the figures are when there is an insufficient number of responses to allow for disclosure of results.

Closing out the results by race, Figure 8 shows the results for small White-owned businesses as compared to National results. Recall that 76.3% of the small businesses in our matched sample are White-owned and thus we would expect the revenue responses to be relatively similar across the two groups. A lower share of small White-owned businesses had revenue declines and a larger share had no change in revenue.

Next, we look at ethnicity. Figure 9 shows the three revenue responses for small Hispanic-owned businesses and non-Hispanic-owned businesses. The responses for Hispanic-owned businesses in the red dashed lines are volatile over response categories and over time. However, in the first phase of the SBPS, there appears to be a slightly clearer pattern of small Hispanic-owned businesses having a large share with declining revenues and a smaller share with unchanging revenues relative to the National results. This pattern is also apparent for changes in employment and hours especially in the later weeks of phase 1 (see Appendix slides).

Finally, we present results for veteran-owned businesses. Figure 10 shows that compared to small non-Veteran-owned businesses, a slightly lower share of small Veteran-owned businesses have declining revenue and a somewhat higher share have no change in revenue. Again, the patterns for changes in employment and hours are similar to that for revenue but the differences across owner type are muted. Relative to small non-Veteran-owned businesses, small Veteran-owned businesses report a smaller share with large negative impact and a larger share with no impact (but the series are very volatile). Veteran-owned small businesses have a shorter

expectation of a return to normal (smaller share choosing the longest horizon, larger share choosing little or no impact).

In sum, small businesses whose revenue outcomes are more negative (higher percentage of decreasing revenue and lower percentage of no change in revenue) are more commonly located in urban areas, with owner(s) who are female, Asian, (and to a lesser extent) Black, and non-Veteran. While these figures provide some insights, earlier work has shown the importance of sectoral and temporal (and to a lesser extent, location) differences. We now turn to the empirical exercises where we are able to control for these and other characteristics.

7. Microdata Results in an Econometric Framework

In this section, we examine how the responses to five core questions differ by business location and business owner characteristics in an econometric framework using the micro-level data. This framework allows us to succinctly measure the significance of the differences and to control for other observable characteristics of businesses. From the publicly available results from the SBPS, we know that sectoral (2-digit NAICS) and time (week collected) variation are important, and variation across states is also relevant (but less important). We therefore control for these dimensions in our econometric framework by adding week, state, and sector fixed effects. In addition, we also include controls for business size (using employment size class bins) and for response count.

Response count captures the number of times the business responded to the SBPS (with values ranging from 1 to 3). Because the responses to the survey are influenced by several selection effects, it is important to be able to control for other fixed business characteristics, many unobserved, that may be correlated with such selection.[29] The response count can control for a variety of fixed business characteristics that matter for the outcomes of interest. It may partially control for survival effects and self-selection into survey response. For instance, it is plausible that businesses are more likely to respond to Census Bureau surveys when they are not struggling to survive.[30] Nevertheless, care must be taken when interpreting this variable. For

[29] Even though we have repeated observations for some businesses across the phases, we cannot add a business fixed effect to our specifications because it would be perfectly correlated with all the other time-invariant characteristics we are interested in (e.g. ethnicity, race, sex, and location).

[30] But this may be different in times of extreme negative shocks. The SBPS included an option for write-in responses, some businesses appeared to respond precisely to have the chance to tell their story of struggle.

example, a value of 3 may result because the business survived over all three phases and it was willing to respond. However, a value of 1 could also mean that the business survived to phase 3 but simply chose not to respond to phases 1-2.

For estimation, we translate the response categories for each question into ordinal values.[31] The response categories readily lend themselves to an ordinal ranking for all questions we are interested in. Overall sentiment response categories (large negative effect, moderate negative effect, no effect, moderate positive effect, large positive effect) are converted to five numerical values with higher numbers representing more positive outcomes. Revenue change, employment change, and hours change each take on three values where the lowest value is for decreased, followed by no change, and then increased. Finally, expectations take on six values where lower values are for more pessimistic expectations (closing is the most pessimistic) and higher values are for more optimistic expectations (already returned to normal is the most optimistic).

Because our dependent variables are all ordinal, we use an ordered probit approach to estimate the relationships we are interested in. Our first set of models considers the five characteristics (location, sex, ethnicity, race, and veteran status) separately as explanatory variables, together with the controls (state, 2-digit sector, week of the survey, the response count indicatory, and employment bins[32]). We include an indicator for whether the business reported receiving PPP funds as well.

We start by discussing the results of the "one-way" specifications which are summarized in Table 6. Consider first the results for location. Given the relatively similar sectoral distributions across urban and rural locations, we may expect our unconditional findings to hold with our controls. Since the models control for state, the coefficients can be interpreted as within-state differences between urban and rural locations. In other words, the specification controls for time-invariant state policies, but not time-varying state effects such as shutdowns or re-openings nor local policies. The results from this specification show that small businesses in rural locations tend to have better outcomes in terms of overall sentiment and revenue changes,

[31] We re-used the scheme used for SBPS indexing. See https://portal.census.gov/pulse/data/downloads/Index-construction-for-the-Small-Business-Pulse-Survey.pdf.
[32] The employment bins considered are 0-4, 5-9, 10-19, 20-49, 50-99, 100-249, 250-499, and 500+ employees.

and more optimistic expectations. They are also less likely to have declines in employment and hours.

The first business owner characteristic that we examine is sex. The coefficient on female is negative and significant for all five core concepts. That is, relative to small businesses with male owner(s), small businesses female owner(s) are more likely to experience negative outcomes for revenue changes and overall impact (likely due to larger negative responses) when we control for other characteristics. They also are more likely to experience decreased employment and hours. Finally, their expectations tend to be more pessimistic. Thus, the unconditional patterns displayed in the figures are robust to adding controls.

Turning to race, across all models two of the owner race categories have all insignificant coefficients relative to the omitted group (White). These categories are American Indian and Alaskan Native (AIAN) and Native Hawaiian and Other Pacific Islander (NHOPI). Recall that the plots for these groups were very volatile, in part due to the very small samples. One owner category, Asian business owner(s), has all negative and significant coefficients. Thus, even when controlling for sectoral (and other differences), these small businesses are found to have more negative experiences. Finally, the results for small businesses with Black owner(s) indicate negative and significant coefficients on four of the five concepts (revenue, employment, hours, and expectations). The fifth concept, overall impact, has a negative but insignificant coefficient. Thus, the estimation results reveal some conditional patterns obscured in the figures and show that small businesses with Black owner(s) generally faced more negative experiences compared to the omitted group.

We next look at estimation results for Ethnicity where the omitted group is non-Hispanic. Only the coefficient for hours is negative and significant (all other coefficients are negative but insignificant). Thus, we can only say that small businesses with Hispanic owner(s) saw more negative impact on hours (likely through larger shares of businesses with decreasing hours) relative to small businesses with non-Hispanic owner(s). Recall that the unconditional results presented in the figures also showed the largest differences for hours (and that these were concentrated in the latter part of phase 1).

Lastly, we look at the assigned Veteran status of the business ownership. The time series plots weakly suggested that small businesses with a majority ownership held by Veterans fared

better than those with majority ownership held by non-Veterans. In terms of sectors, the ranking of the sectors for Veteran-owned businesses are similar to those for the entire economy. From the 2018 ABS, we know that the top sectors for Veteran-owned businesses are Professional, Scientific, and Technical Services (54) and Construction (23), sectors which did not see as large negative impacts in the SBPS which may lead us to expect that the difference will be attenuated when we add controls, and Health Care and Social Services (62) and Retail Trade (45), sectors which did see large negative impacts in the SBPS. The estimation results show that these differences between small Veteran-owned businesses and non-Veteran owned businesses disappear once we control for other characteristics.

In sum, our ordered probit estimations using business characteristics one at a time show that small businesses whose revenue outcomes are more negative (higher percentage of decreasing revenue, lower percentage of no change in revenue, lower percentage of increasing revenue) are more concentrated in small businesses located in urban areas, and with owner(s) who are female, Asian, and Black. Business owner characteristics that did not show significant differences (possibly due to small sample sizes) include AIAN, NHOPI, Hispanic, and Veteran. That is, the results confirm the patterns in figures that looked strong for small businesses in rural areas and with female or Asian owners, reveal patterns that were obscured for small businesses with Black owners, confirm the patterns of volatility to AIAN, NHOPI, and Hispanic, and reinforce the weak patterns for small businesses with Veteran owner(s).

Table 6 also includes the probit estimation of our five core questions on whether the business received PPP, using our full set of controls but not including location or owner characteristics. The receipt of PPP is positively and significantly associated with changes in employment and hours and negatively and significantly associated with changes in revenue, sentiment, and expectations. This is suggestive that businesses faring relatively worse during the pandemic were more likely to request federal assistance through this program. While employment and hours are positively associated with the receipt of PPP, we caution against interpreting this as a causal relationship.

We highlight here the average adjusted predictions for these one-way models for which coefficients were statistically significant in the discussion above. Table 7 presents averaged adjusted predictions for decreasing revenue. Receiving PPP is associated with an increase the

probability by 7.2% of reporting decreased revenues. Rural businesses are 2.1% less likely to report decreasing revenues than urban businesses. By owner characteristic, female-owned businesses are 1.6% more likely to report decreasing revenues than male-owned businesses, and Hispanic-owned businesses are 1.3% more likely than non-Hispanic-owned businesses to report this. Asian-owned businesses are 5.6% more likely to report decreasing revenue, while Black-owned businesses are 4.0% more likely to report decreasing revenue.

Adjusted predictions for employment change are similar across different businesses but smaller in magnitude. Table 8 presents average adjusted predictions for decreasing employment. Businesses that received PPP were 2.7% less likely to report a decrease in employment than those that did not receive PPP. Female-owned businesses were 1.7% more likely to report a decrease in employment than male-owned businesses, while Asian- and Black-owned businesses were 3.1% and 3.4% more likely to report a decrease in employment than White-owned businesses. Urban and Hispanic-owned businesses were more likely to report a decrease in employment than rural and non-Hispanic-owned businesses, respectively, but these differences while statistically significant are less than 1%.

Our last empirical exercise using the micro-level data is the fully saturated model whose results are presented in Table 9. As with the one-way models, AIAN- and NHOPI-owned businesses are associated with negative sentiment and expectations as well as revenue and employment outcomes relative to White-owned businesses, but these results are not statistically significant, likely due to the small number of these businesses in the matched samples as well as in the population of business owners. Asian and Black ownership is associated with statistically significant negative outcomes for revenue, employment, hours, and outlook; Asian ownership is associated with statistically significant negative outcomes for sentiment as well.

Female-owned businesses are associated, statistically significantly, with more negative outcomes relative to male-owned businesses for all five core concepts, whereas businesses located in rural areas are associated, statistically significantly, with more positive outcomes relative to urban businesses across all five concepts. Model coefficients for ethnicity and veteran status are not statistically significant, except for Hispanic owned businesses being associated with a more negative outcome for hours. Last, receiving PPP continues to have a statistically

significant positive relationship to hours and employment and a negative relationship to sentiment, revenue, and expectations.

8. Conclusion and Future Research

The Small Business Pulse Survey (SBPS) provides timely information during the COVID-19 pandemic about an important part of the firm population, small businesses. The SBPS website allows users to see weekly results for subjects such as changes in revenue, employment, and hours; overall impact; business expectations; operational challenges; and other content at the national, state, and selected MSA level by sector (2-digit NAICS). A variety of stakeholders, including policymakers, contacted the Census Bureau to request these statistics by demographics of business owners and by rural and urban designations. We describe our attempt to be responsive to these requests by providing estimates of the SBPS by demographics of business owners and location. We provide a detailed description of our methodology so users can determine the fitness for use for their specific needs. We also provide an econometric analysis of five of the core concepts questions by owner demographics and location as further information relevant to determining fitness for use.

Published statistics for the first three phases of the SBPS by owner characteristics as well as by rural and urban location are available for download on the SBPS website. Downloadable files include estimates for each question as well as standard errors. For the convenience of users, we provide three appendices. Time series graphs for the five questions comprising the core content (business sentiment, business expectations, and changes in revenue, employment, and hours) are found in the appendices: Rural and Urban Published Estimates are in Appendix A, Owner Characteristics Published Estimates are in Appendix B. Appendix C provides guidance for evaluating differences between these published estimates since caution should be used in interpreting differences in estimates either between groups or across time.

As is evident in our discussion, one main takeaway from the paper is the complexity of combining survey results from two very different surveys. By contrast, it is relatively straight-forward to combine information from the Business Register with the SBPS to provide estimates of the rural and urban designation. The two surveys differ in terms of the target population and

the sampling strategy. Added to these differences is the complexity of the methodology associated with assigning business owner characteristics in the ABS. We attempt to appropriately highlight what these challenges mean when interpreting the estimates provided.

One limitation when considering the results of the Small Business Pulse Survey, especially as it relates to minority-owned businesses, is that the target population for the SBPS excludes nonemployers which account for the majority of small businesses and the majority of minority-owned businesses in the US. The main challenge in creating SBPS results by owner characteristics is the match between the two surveys (and the complexity of assigning business ownership); care should be used when interpreting these data due to documented shortcomings of the match. Future research could pay close attention to understanding sample selection issues in linking the SBPS and the ABS; future research is needed to overcome these limitations with the ultimate goal to make analysis of such matched samples more representative. Likewise, caution should be used when interpreting regression results given the relatively small numbers of minority-owned employer businesses in general as well as in data matching both samples. Future research on assigning owner characteristics from multiple data sources to the universe of firms Business Register is a promising avenue of inquiry.

The COVID-19 pandemic highlights the need for timely, frequent, detailed data. The Census Bureau released some *experimental* data products (such as the SBPS) to meet these needs. The products discussed in this paper are *research* data products as they are a first attempt to address a complicated measurement issue with the goal of providing useful information while encouraging feedback. These data will be available in the FSRDCs for qualified users on approved projects to use so that other users can provide additional insights from these data. We will use feedback from this release in determining whether a future release for the next three phases of the SBPS is warranted. As with any research project, feedback is critical for our ability to continually refine and improve our methods and approach.

Table 1. Percent of Respondent Businesses in the SBPS by Sector, Location Type

Sector	Overall[1]	Urban[2]	Rural[2]
All		80	10
11	0.2	0.1	0.9
21	0.3	0.2	0.9
22	0.1	0.1	0.3
23	12.9	11.6	23.3
31	4.2	3.9	6
42	5.0	5.0	4.7
44	11.0	10.9	10.3
48	3.3	2.8	6.0
51	1.3	1.4	1.2
52	4.1	4.4	2.2
53	5.7	5.9	4.5
54	14.4	15.4	9.0
55	0.1	0.1	0.1
56	6.1	5.9	7.7
61	1.7	1.7	1.1
62	11.3	12.2	4.8
71	2.4	2.3	2.8
72	9.2	9.1	8.4
81	7.0	7.2	5.8

Notes: (1) Percent by sector and overall numbers are constructed using SBPS tabulation weights for each phase 1-3 of the SBPS and then averaged across phases. (2) Calculated as in (1) using rural and urban classification of physical business location. Columns may not sum to 100% due to rounding. Approximately 10% of businesses reporting to the SBPS do not have physical locations that are geocoded for rural/urban designation.

Table 2. Number and Percent of Employer Businesses (1-499 employees) by Sex, Race, Ethnicity, and Veteran Status, ABS 2018 and 2019

Characteristic	Ownership	Number of businesses, ABS 2018	2018 ABS % Businesses	Number of businesses, ABS 2019	2019 ABS % Businesses
Total	Total	5,132,898		4,990,502	
Sex	Male	3,121,561	60.8	3,051,861	61.2
	Female	997,047	19.4	987,375	19.8
	Equally owned	765,615	14.9	748,444	15.0
	Not classified		4.7		3.9
Race	American Indian and Alaska Native	21,679	0.4	21,047	0.4
	Asian	503,653	9.8	514,837	10.3
	Black or African American	108,931	2.1	107,383	2.2
	Native Hawaiian and Other Pacific Islander	6,067	0.1	S	S
	White	4,248,686	82.8	4,141,506	83.0
	Not classified		4.7		3.9
Ethnicity	Non-Hispanic	4,551,127	88.7	4,453,600	89.2
	Hispanic	287,842	5.6	290,877	5.8
	Equally owned	45,254	0.9	42,668	0.9
	Not classified		4.7		3.9
Veteran Status	Veteran	313,905	6.1	S	S
	Equally owned	138,465	2.7	127,515	2.6
	Non-veteran	4,431,850	86.3	4,365,772	87.5
	Not classified		4.7		3.9

Source: Tables AB1700CSA01, AB1800CSA01 are used for the Not classified statistics. Tables AB1700CSA04, AB1800CSA04 are used for the remaining statistics. All shares are authors' calculations. Cells marked 'S' are incalculable due to suppressions in the published data.

Table 3. Percent of Businesses in the SBPS-ABS Matched Responses by Sex, Race, Ethnicity, and Veteran Status

Characteristic	Ownership	2018 ABS % Businesses[1]	SBPS-ABS Match % Businesses[2]
Sex	Male	60.8	55.6
	Female	19.4	16.0
	Equally owned	14.9	13.1
	Not classified	4.7	15.3
Race	American Indian and Alaska Native	0.4	0.5
	Asian	9.8	5.9
	Black or African American	2.1	1.1
	Native Hawaiian and Other Pacific Islander	0.1	0.1
	White	82.8	76.3
	Not classified	4.7	16.0
Ethnicity	Non-Hispanic	88.7	80.9
	Hispanic	5.6	3.1
	Equally owned	0.9	0.8
	Not classified	4.7	15.3
Veteran Status	Veteran	6.1	5.3
	Equally owned	2.7	0
	Non-veteran	86.3	76.9
	Not classified	4.7	17.8

Notes: (1) Reproduced from previous table for convenience. (2) Constructed using SBPS tabulation weights for each phase 1-3 of the SBPS and then averaged across phases. Columns may not sum to 100% due to rounding.

Table 4. NES-D 2017 Ownership by Sex, Race, Ethnicity, and Veteran Status

Characteristic	Ownership	Number of Businesses	% Businesses
Total	Total	25,310,000	
Sex	Male	13,910,000	55.0
	Female	10,550,000	41.7
	Equally owned	612,000	2.4
Race	American Indian and Alaska Native	84,500	0.3
	Asian	1,960,000	7.7
	Black or African American	2,951,000	11.7
	Native Hawaiian and Other Pacific Islander	38,500	0.2
	White	19,990,000	79.0
Ethnicity	Non-Hispanic	21,390,000	84.5
	Hispanic	3,635,000	14.4
	Equally owned	44,500	0.2
Veteran status	Veteran	1,421,000	5.6
	Equally owned	100,000	0.4
	Non-Veteran	23,550,000	93.0

Source: Nonemployer Statistics by Demographics program, Table 1 - Statistics for Nonemployer Businesses by Industry, Sex, Ethnicity, Race, and Veteran Status for the U.S., States, and Metro Areas: 2017, U.S. Census Bureau. Accessed 2021-04-07, and authors' calculations. Columns may not sum to total due to rounding.

Table 5. Percent of Businesses in the SBPS-ABS Matched Responses by Sector

Sector	Overall[1]	ABS-SBPS match[2]
11	0.2	0.3
21	0.3	0.5
22	0.1	0.3
23	12.9	10.5
31	4.2	6.2
42	5.0	3.8
44	11.0	10.8
48	3.3	4.1
51	1.3	2.4
52	4.1	3.9
53	5.7	5.6
54	14.4	17.6
55	0.1	0.1
56	6.1	5.1
61	1.7	2.5
62	11.3	10.5
71	2.4	4.2
72	9.2	6.6
81	7.0	5.0

Notes: (1) Percents by sector are constructed using SBPS tabulation weights for each phase 1-3 of the SBPS and then averaged across phases. (2) Calculated as in (1) using SBPS-ABS matched responses. Columns may not sum to 100% due to rounding.

Table 6. One-way Ordered Probit Estimates

		Overall	Revenue	Employment	Hours	Outlook
PPP	Received PPP	-0.427***	-0.190***	0.118***	0.0280***	-0.252***
		(0.00495)	(0.00446)	(0.00500)	(0.00469)	(0.00499)
Location	Rural	0.156***	0.0562***	0.0342***	0.0335***	0.143***
		(0.00705)	(0.00661)	(0.00766)	(0.00724)	(0.00728)
	Location not classified	0.0449***	0.0194**	-0.00352	0.0167*	0.0494***
		(0.00703)	(0.00674)	(0.00786)	(0.00705)	(0.00659)
	Received PPP	-0.425***	-0.189***	0.119***	0.0286***	-0.250***
		(0.00495)	(0.00446)	(0.00501)	(0.00470)	(0.00499)
Sex	Female	-0.0799***	-0.0420***	-0.0755***	-0.0616***	-0.0597***
		(0.0107)	(0.01000)	(0.0114)	(0.0105)	(0.0100)
	Sex equally owned	-0.0221	0.0205	-0.0195	0.00683	-0.0179
		(0.0121)	(0.0115)	(0.0128)	(0.0119)	(0.0115)
	Sex not classified	-0.0144**	-0.0162**	-0.0215***	-0.0137*	-0.0203***
		(0.00556)	(0.00529)	(0.00609)	(0.00555)	(0.00544)
	Received PPP	-0.428***	-0.190***	0.118***	0.0279***	-0.252***
		(0.00495)	(0.00446)	(0.00500)	(0.00469)	(0.00499)
Ethnicity	Hispanic	-0.0169	-0.0331	-0.0409	-0.0647**	-0.00407
		(0.0225)	(0.0215)	(0.0261)	(0.0230)	(0.0210)
	Ethnicity equally owned	-0.147**	-0.0137	-0.0821	-0.0238	-0.0828*
		(0.0482)	(0.0456)	(0.0474)	(0.0437)	(0.0389)
	Ethnicity not classified	0.00211	-0.0128**	-0.00621	-0.00554	-0.00703
		(0.00493)	(0.00466)	(0.00533)	(0.00491)	(0.00474)
	Received PPP	-0.427***	-0.190***	0.118***	0.0279***	-0.252***
		(0.00495)	(0.00446)	(0.00500)	(0.00469)	(0.00499)

Table 6. One-way Ordered Probit Estimates (continued)

		Overall	Revenue	Employment	Hours	Outlook
Race	AIAN	-0.103*	-0.101	-0.111	-0.0835	-0.0597
		(0.0520)	(0.0527)	(0.0572)	(0.0583)	(0.0491)
	Asian	-0.0823***	-0.146***	-0.137***	-0.0883***	-0.141***
		(0.0172)	(0.0162)	(0.0179)	(0.0160)	(0.0151)
	Black	-0.0602	-0.104**	-0.147***	-0.123***	-0.0878**
		(0.0343)	(0.0347)	(0.0404)	(0.0349)	(0.0321)
	NHOPI	-0.0380	-0.0685	-0.152	0.00904	-0.0576
		(0.105)	(0.0953)	(0.110)	(0.110)	(0.0997)
	Race not classified	-0.00400	-0.0235***	-0.0177**	-0.0114*	-0.0185***
		(0.00502)	(0.00475)	(0.00546)	(0.00503)	(0.00486)
	Received PPP	-0.427***	-0.190***	0.118***	0.0279***	-0.252***
		(0.00495)	(0.00446)	(0.00500)	(0.00469)	(0.00499)
Veteran status	Veteran	0.0174	-0.0168	0.00492	0.00656	0.0217
		(0.0164)	(0.0152)	(0.0177)	(0.0161)	(0.0162)
	Veteran status not classified	0.00576	-0.0125**	-0.00429	-0.00328	-0.00405
		(0.00501)	(0.00475)	(0.00542)	(0.00498)	(0.00480)
	Received PPP	-0.427***	-0.190***	0.118***	0.0280***	-0.252***
		(0.00495)	(0.00446)	(0.00500)	(0.00469)	(0.00499)

All models estimated using 620,000 observations and tabulation weights from the SBPS. All models include controls for state, sector, employment size class, and week of the survey as well as an indicator for the number of times responding to the survey. Standard errors are clustered at the firm level and are in parentheses (* $p<0.05$, ** $p<0.01$, *** $p<0.001$).

Table 7. Adjusted Predictions for Revenue Decreasing

		Margin	SE	z
PPP	Received PPP	0.413	0.001	296.0
	Did not receive PPP	0.485	0.001	479.4
Location	Rural	0.445	0.002	187.7
	Urban	0.466	0.001	496.3
Sex	Female	0.474	0.003	137.9
	Male	0.458	0.002	246.7
Ethnicity	Hispanic	0.472	0.008	58.0
	non-Hispanic	0.459	0.002	289.9
Race	AIAN	0.494	0.020	24.4
	Asian	0.511	0.006	84.6
	Black	0.495	0.013	37.3
	NHOPI	0.481	0.037	13.2
	White	0.455	0.002	280.5
Veteran status	Veteran	0.466	0.006	82.2
	non-Veteran	0.459	0.002	283.1

Adjusted predictions averaged across all responses for one-way models of revenue for outcome decreased revenue.

Table 8. Adjusted Predictions for Employment Decreasing

		Margin	SE	z
PPP	Did not receive PPP	0.157	0.001	153.0
	Received PPP	0.130	0.001	193.5
Location	Rural	0.132	0.002	86.9
	Urban	0.139	0.001	212.9
Sex	Female	0.151	0.002	64.5
	Male	0.134	0.001	110.5
Ethnicity	Hispanic	0.146	0.006	25.3
	non-Hispanic	0.137	0.001	130.5
Race	AIAN	0.160	0.014	11.8
	Asian	0.166	0.004	39.5
	Black	0.169	0.010	17.1
	NHOPI	0.170	0.027	6.3
	White	0.135	0.001	125.9
Veteran status	Veteran	0.137	0.004	37.0
	non-Veteran	0.138	0.001	127.8

Adjusted predictions averaged across all responses for one-way models of employment change for outcome decreased number of paid employees.

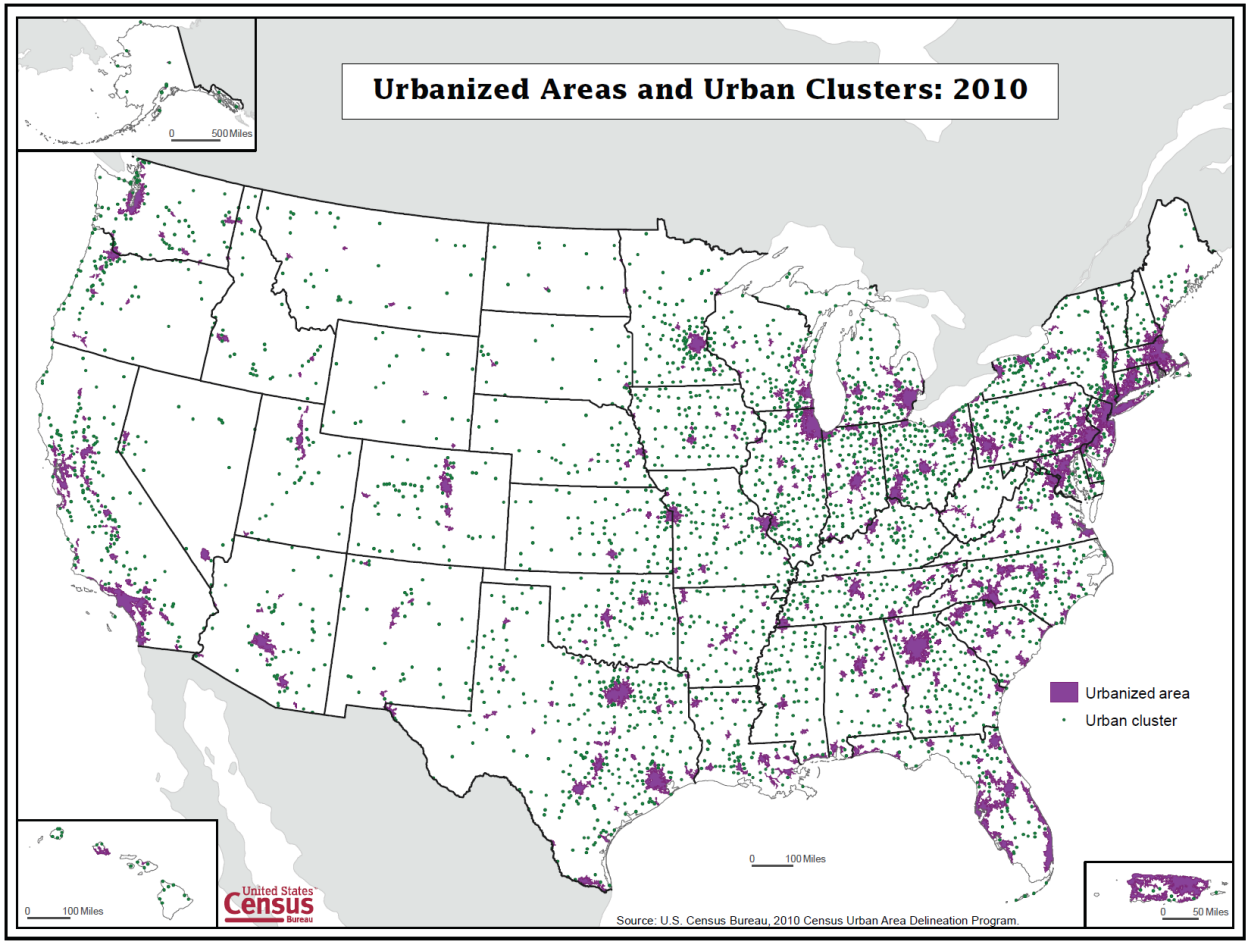
Table 9. Saturated Ordered Probit Estimates

	Overall	Revenue	Employment	Hours	Outlook
AIAN	-0.0949	-0.0912	-0.102	-0.0726	-0.0551
	(0.0520)	(0.0527)	(0.0573)	(0.0584)	(0.0492)
Asian	-0.0744***	-0.145***	-0.136***	-0.0881***	-0.135***
	(0.0172)	(0.0163)	(0.0179)	(0.0160)	(0.0151)
Black	-0.0470	-0.0957**	-0.140***	-0.116***	-0.0776*
	(0.0344)	(0.0348)	(0.0404)	(0.0349)	(0.0323)
NHOPI	-0.0391	-0.0643	-0.151	0.0124	-0.0581
	(0.105)	(0.0956)	(0.109)	(0.109)	(0.0994)
Race not classified	-0.0644	0.0167	-0.0440	0.00746	-0.0316
	(0.0460)	(0.0423)	(0.0425)	(0.0420)	(0.0404)
Female	-0.0775***	-0.0400***	-0.0725***	-0.0591***	-0.0553***
	(0.0108)	(0.0101)	(0.0115)	(0.0106)	(0.0101)
Sex equally owned	-0.0236	0.0182	-0.0165	0.00897	-0.0209
	(0.0126)	(0.0120)	(0.0135)	(0.0125)	(0.0120)
Sex not classified	0.0321	-0.0186	0.0385	0.0101	-0.00674
	(0.0511)	(0.0485)	(0.0499)	(0.0479)	(0.0461)
Hispanic	-0.0147	-0.0387	-0.0474	-0.0677**	-0.00723
	(0.0226)	(0.0216)	(0.0262)	(0.0231)	(0.0211)
Ethnicity equally owned	-0.143**	-0.0392	-0.0884	-0.0406	-0.0832*
	(0.0484)	(0.0458)	(0.0480)	(0.0442)	(0.0394)
Veteran	-0.00319	-0.0278	-0.0164	-0.00615	0.00215
	(0.0166)	(0.0154)	(0.0180)	(0.0163)	(0.0165)
Veteran status not classified	0.00789	-0.0312	-0.0332	-0.0436	0.00486
	(0.0251)	(0.0254)	(0.0270)	(0.0248)	(0.0244)
Rural	0.156***	0.0549***	0.0329***	0.0323***	0.142***

	(0.00706)	(0.00662)	(0.00767)	(0.00725)	(0.00728)
Location not classified	0.0448***	0.0196**	-0.00353	0.0167*	0.0496***
	(0.00703)	(0.00673)	(0.00786)	(0.00705)	(0.00659)
Received PPP	-0.425***	-0.189***	0.118***	0.0282***	-0.250***
	(0.00495)	(0.00446)	(0.00501)	(0.00469)	(0.00499)

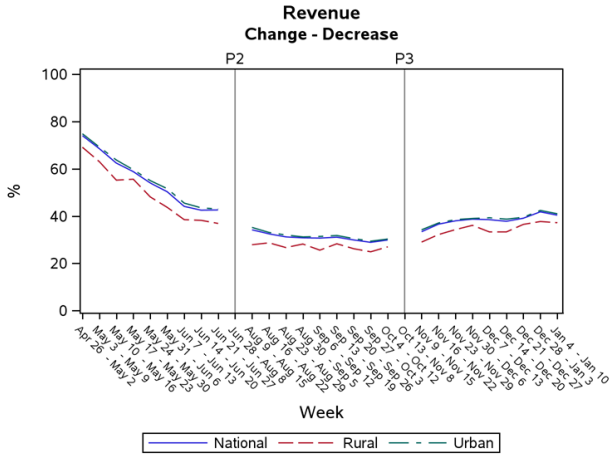
All models estimated using 620,000 observations and tabulation weights from the SBPS. All models include controls for state, sector, employment size class, and week of the survey as well as an indicator for the number of times responding to the survey. Standard errors are clustered at the firm level and are in parentheses (* p<0.05, ** p<0.01, *** p<0.001). Ethnicity not classified parameter estimates could not be calculated due to collinearity.

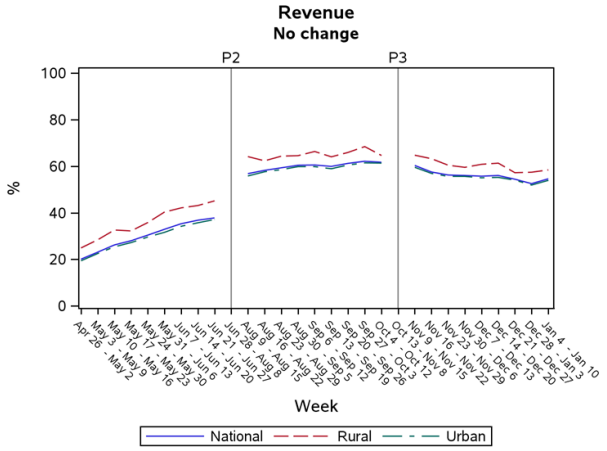
Figure 1. Urbanized Areas and Urban Clusters 2010

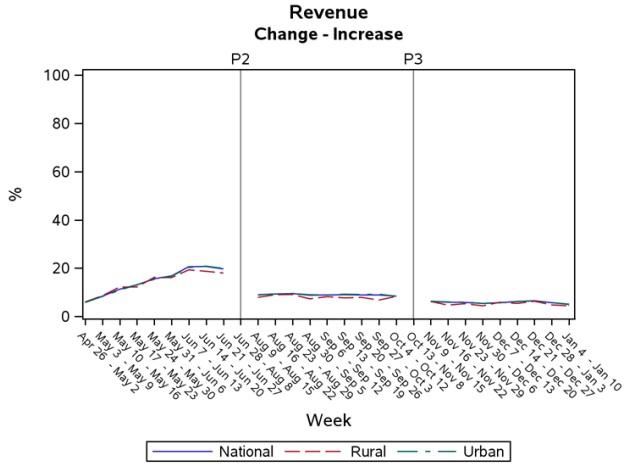


Source: Ratcliffe, Burd, Holder, and Fields (2016).

Figure 2: Revenue Changes by Urban and Rural Location

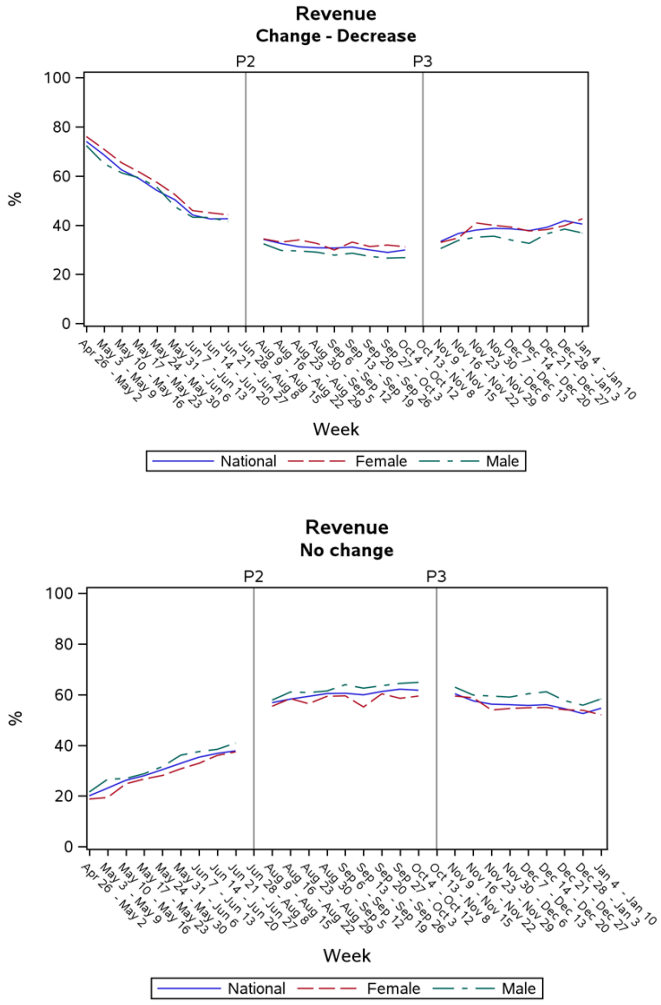


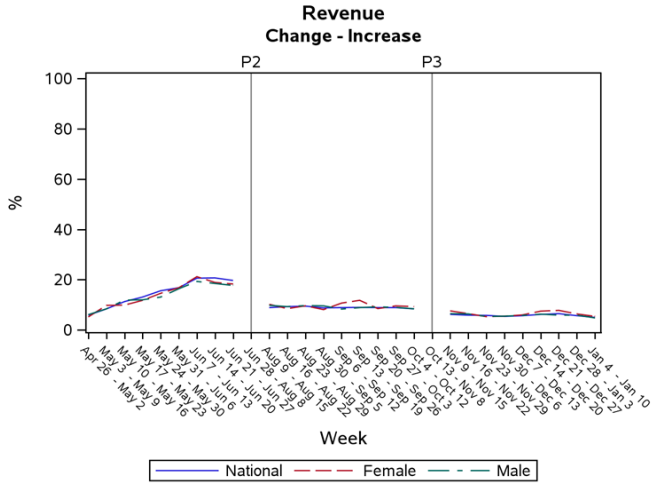




Source: Authors' calculations

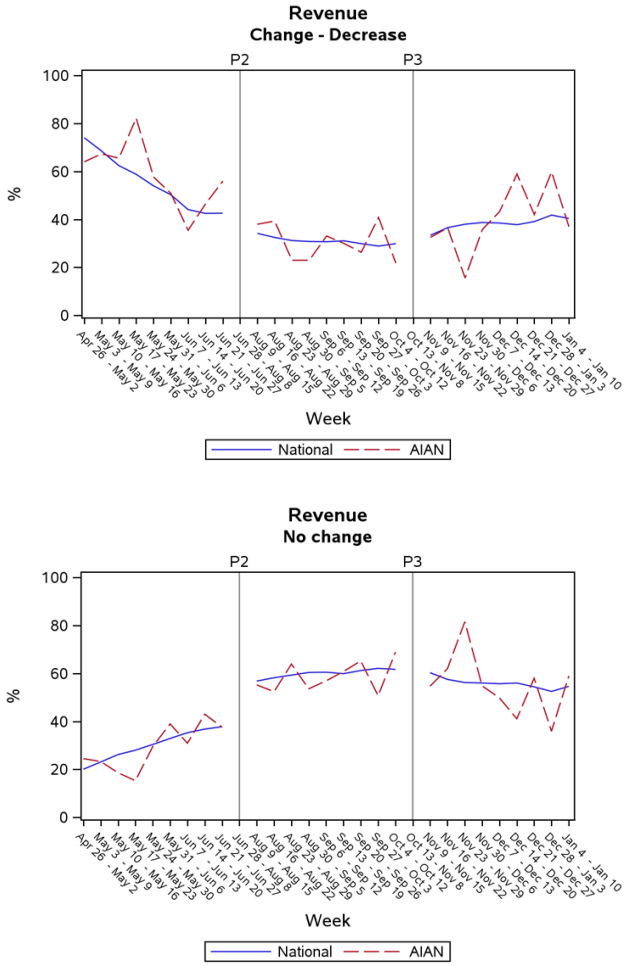
Figure 3: Revenue Changes by Business Owner Sex

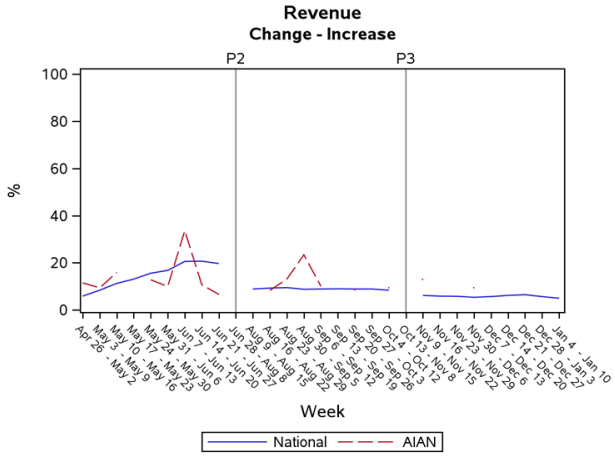




Source: Authors' calculations

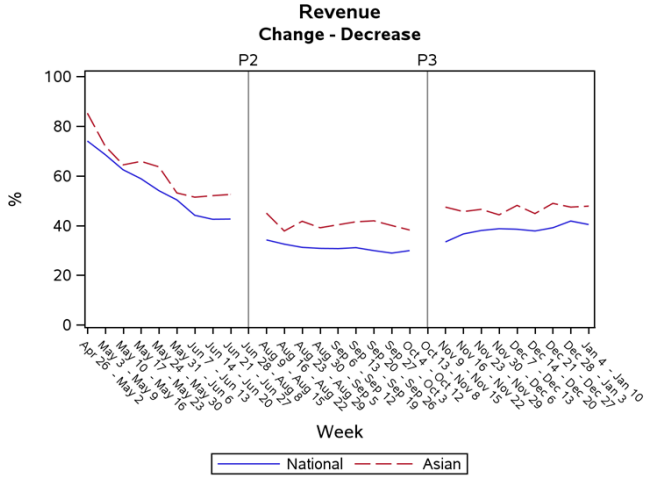
Figure 4: Revenue Changes by Business Owner Race American Indian and Alaska Native

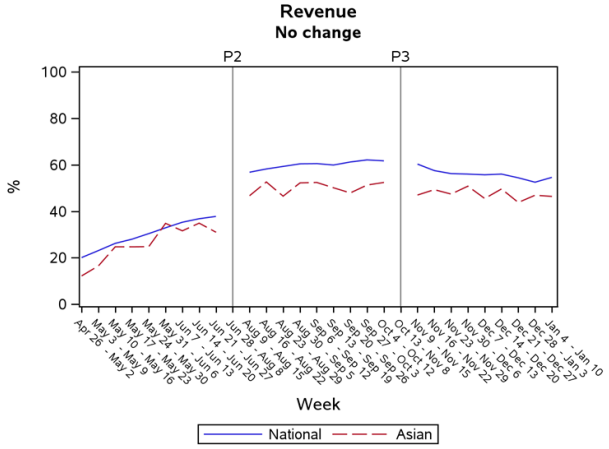


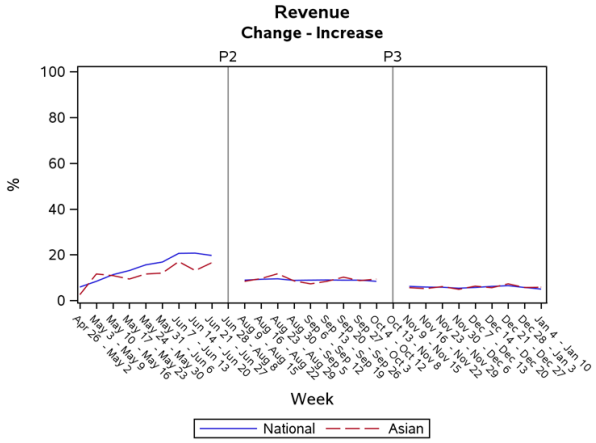


Source: Authors' calculations

Figure 5: Revenue Changes by Business Owner Race: Asian

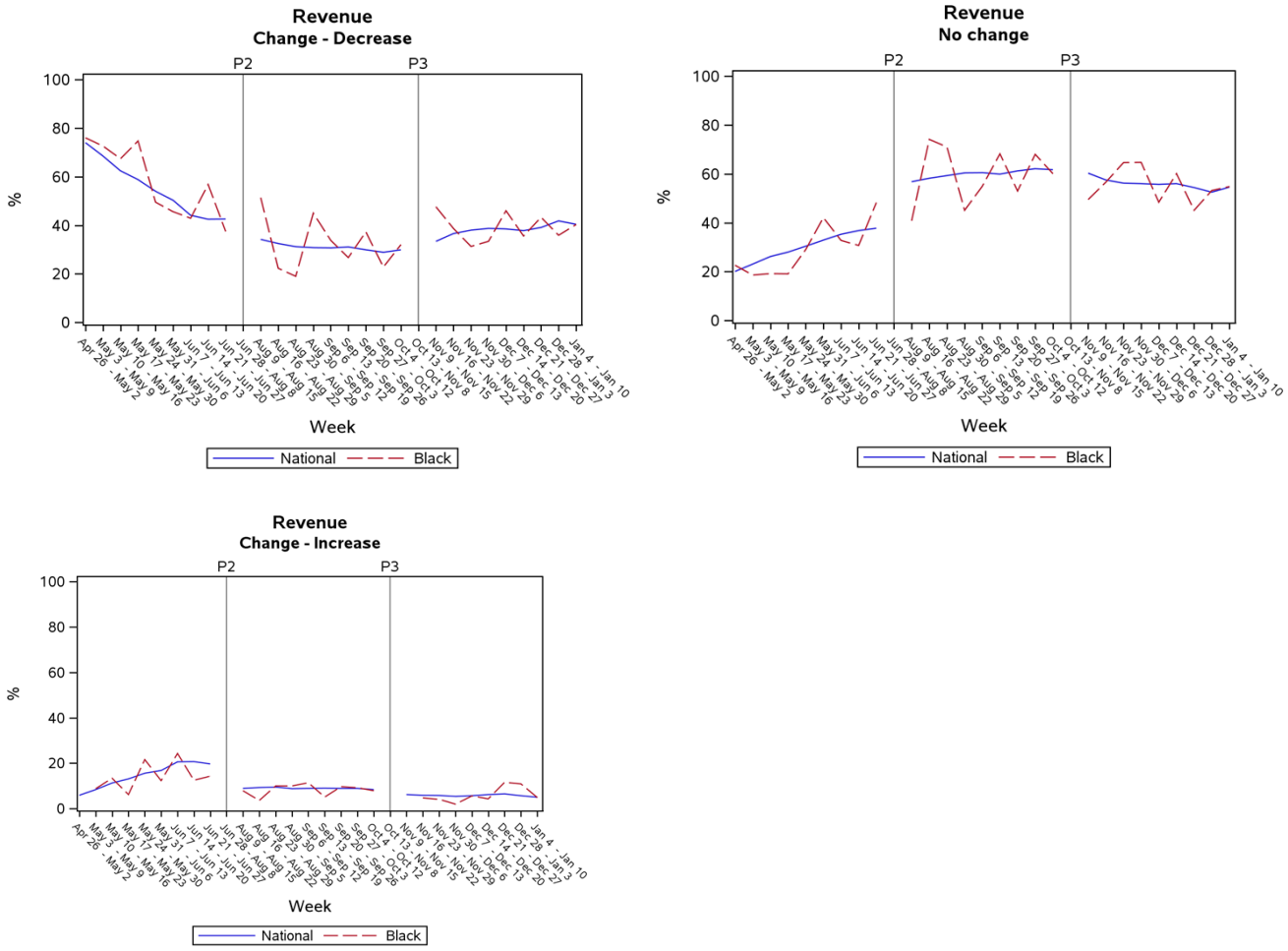






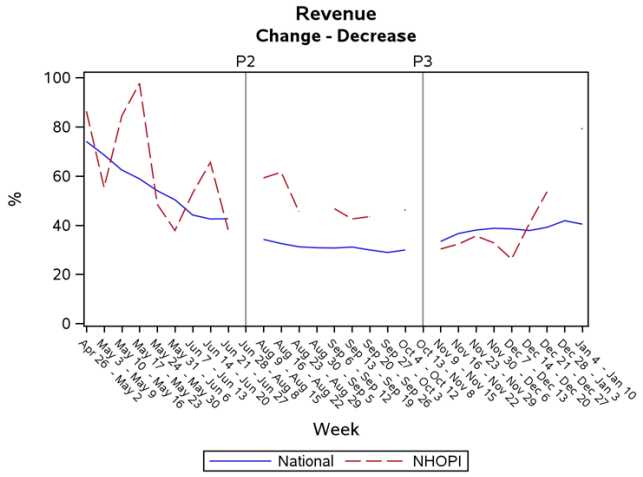
Source: Authors' calculations

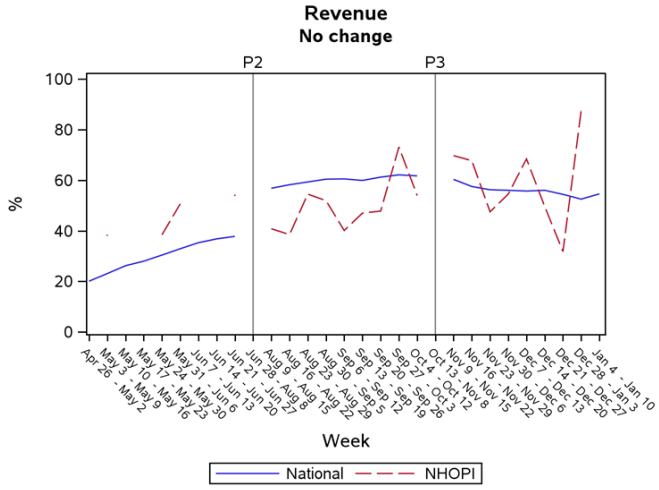
Figure 6: Revenue Changes by Business Owner Race: Black or African American

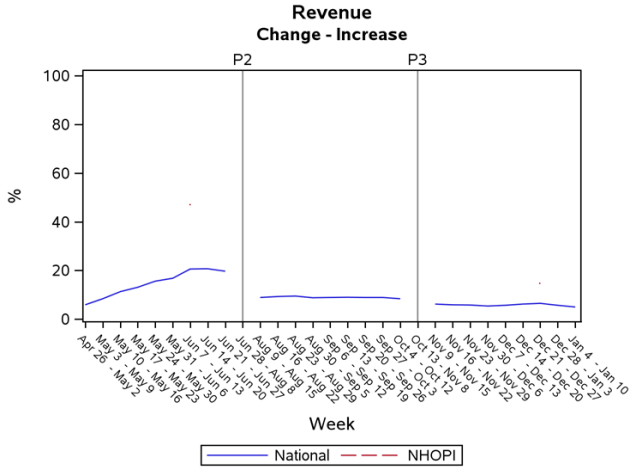


Source: Authors' calculations

Figure 7: Revenue Changes by Business Owner Race Native Hawaiian and Other Pacific Islander

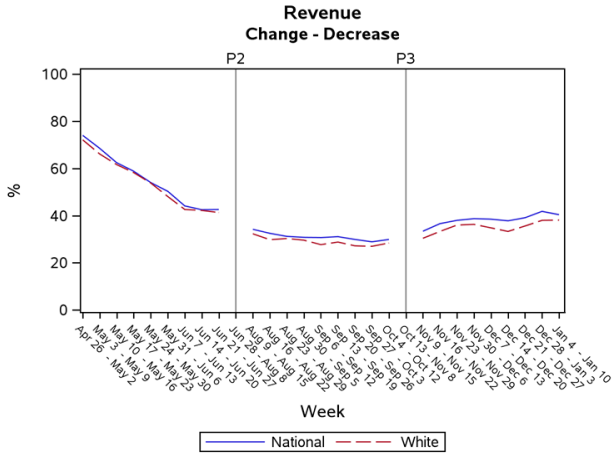


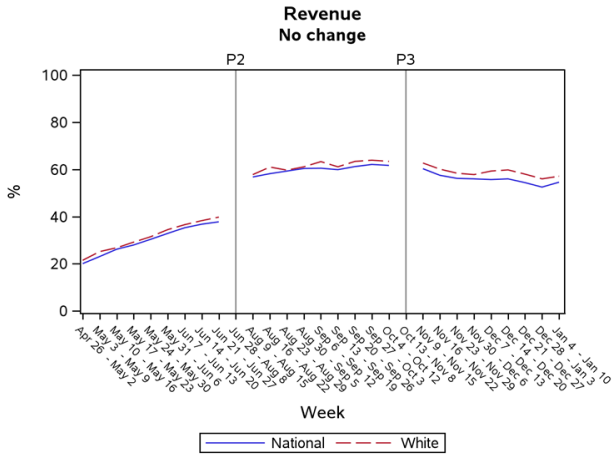


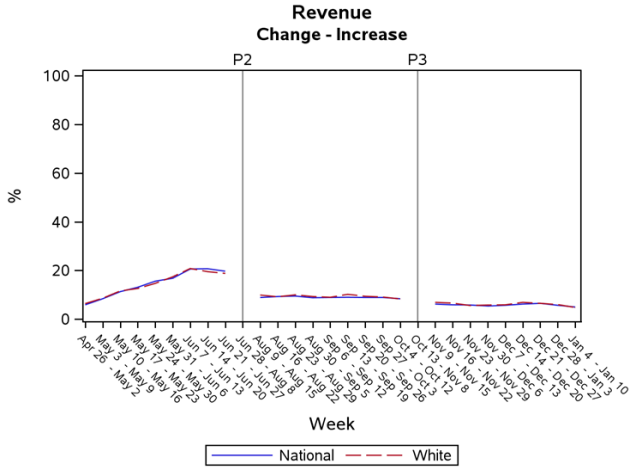


Source: Authors' calculations

Figure 8: Revenue Changes by Business Owner Race: White

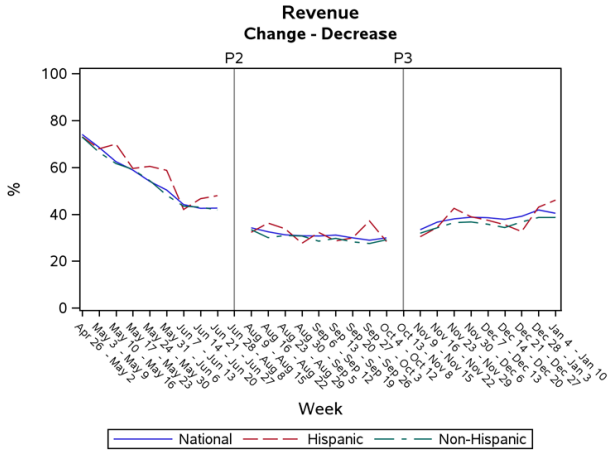


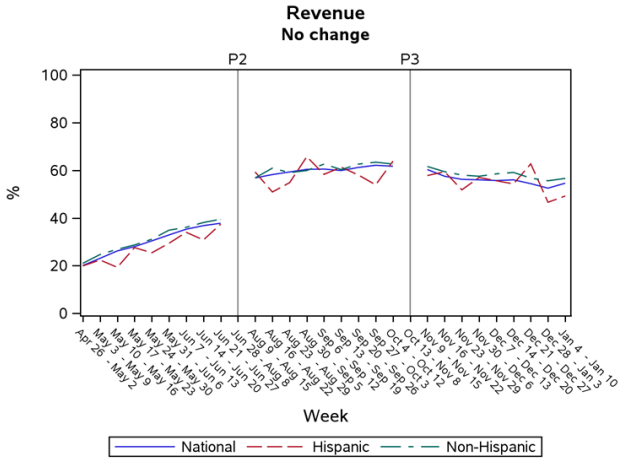


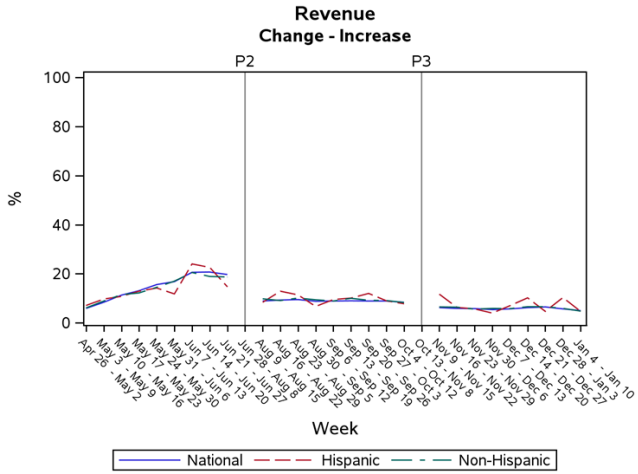


Source: Authors' calculations

Figure 9: Revenue Changes by Business Owner Ethnicity

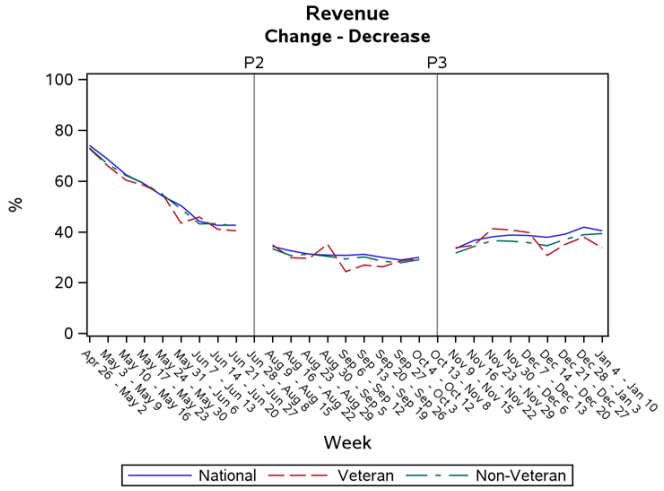


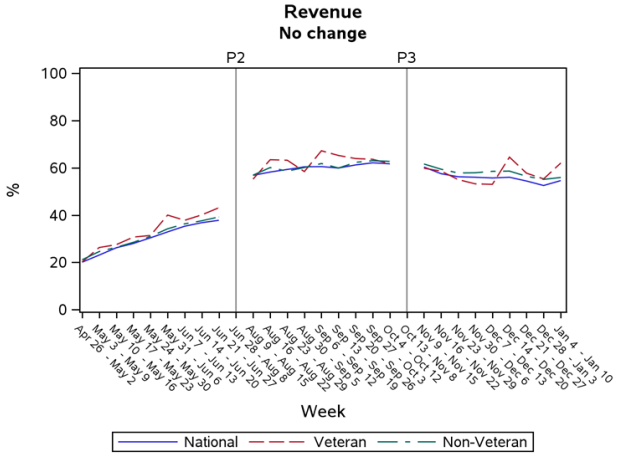


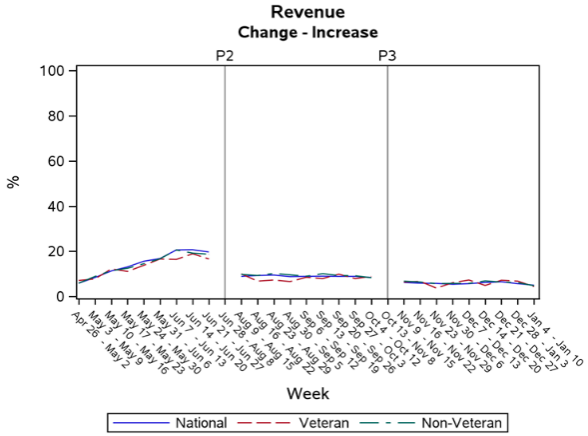


Source: Authors' calculations

Figure 10: Revenue Changes by Business Owner Veteran Status







Source: Authors' calculations

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Appendix B. Rural and Urban Published Estimates

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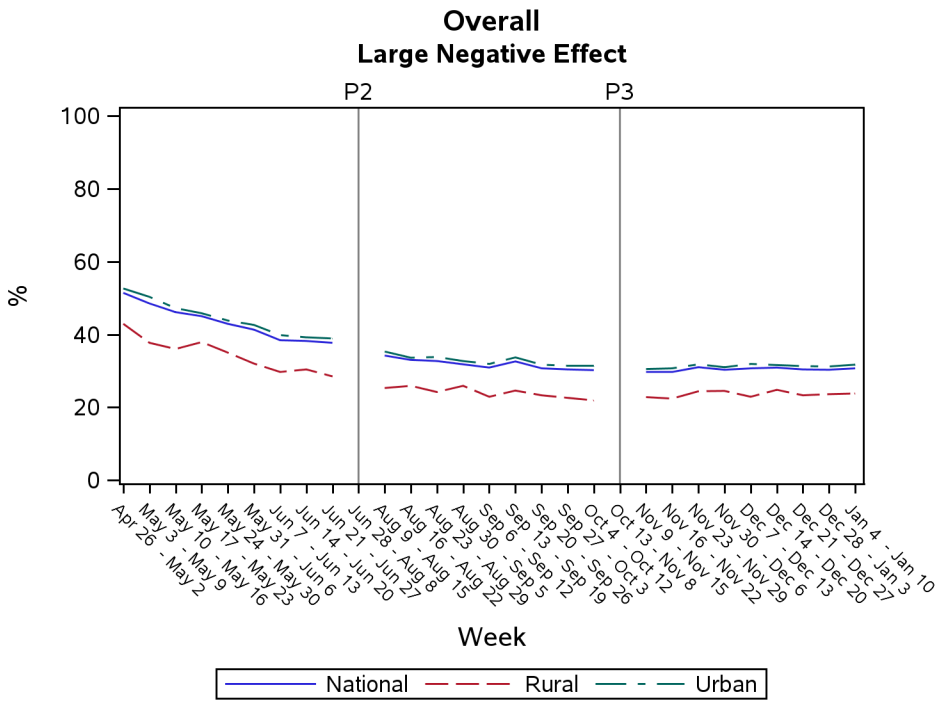
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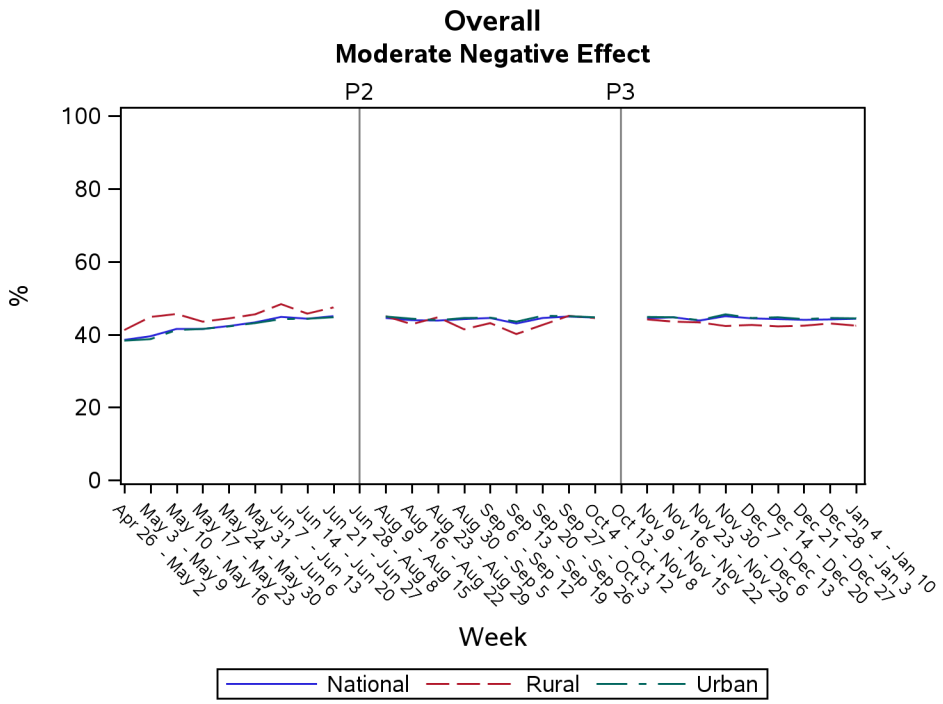
P3
100
80
60
40
20
0
%
Week
National
Rural
Urban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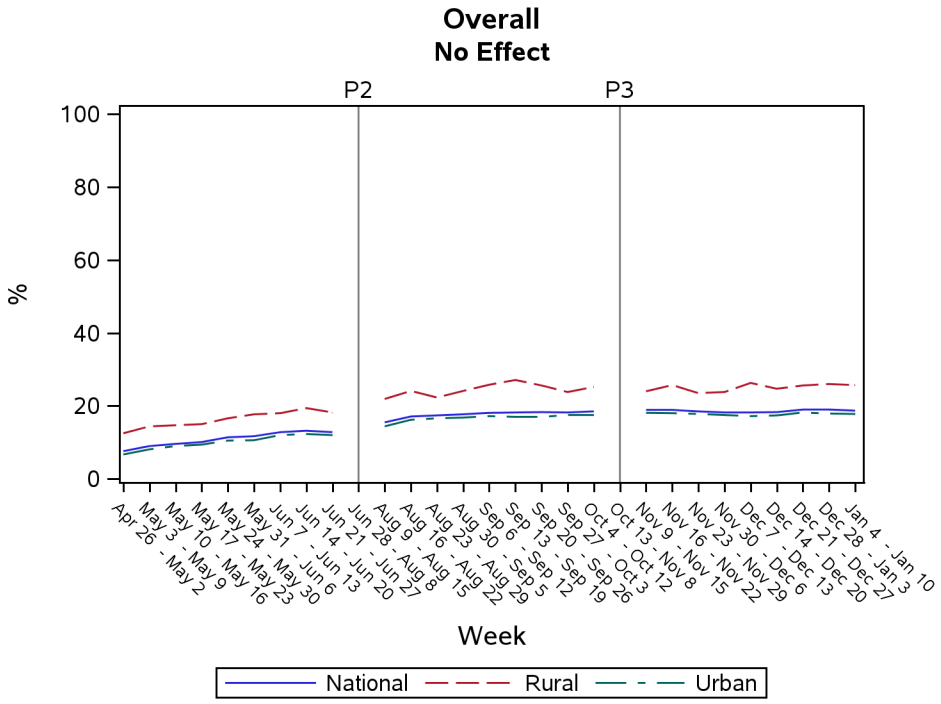
0
%
Week
National
Rural
Urban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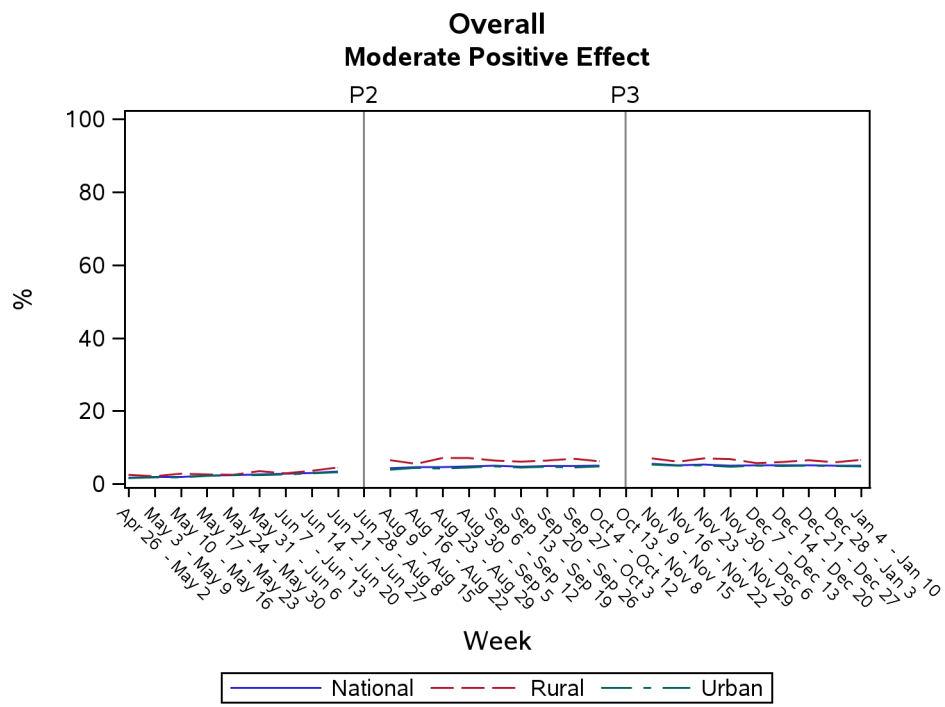
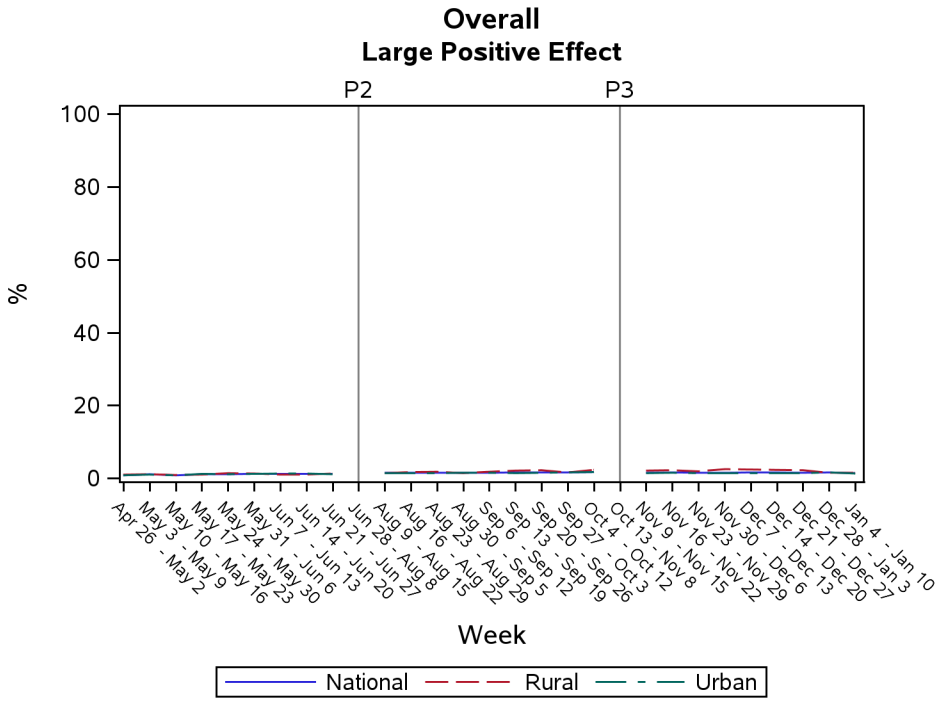
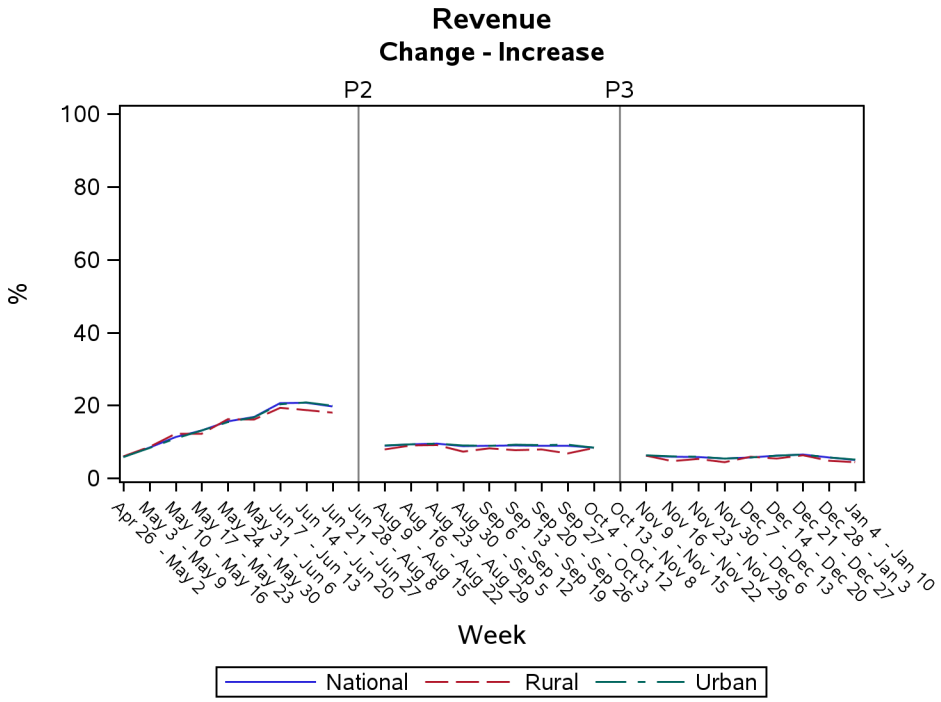
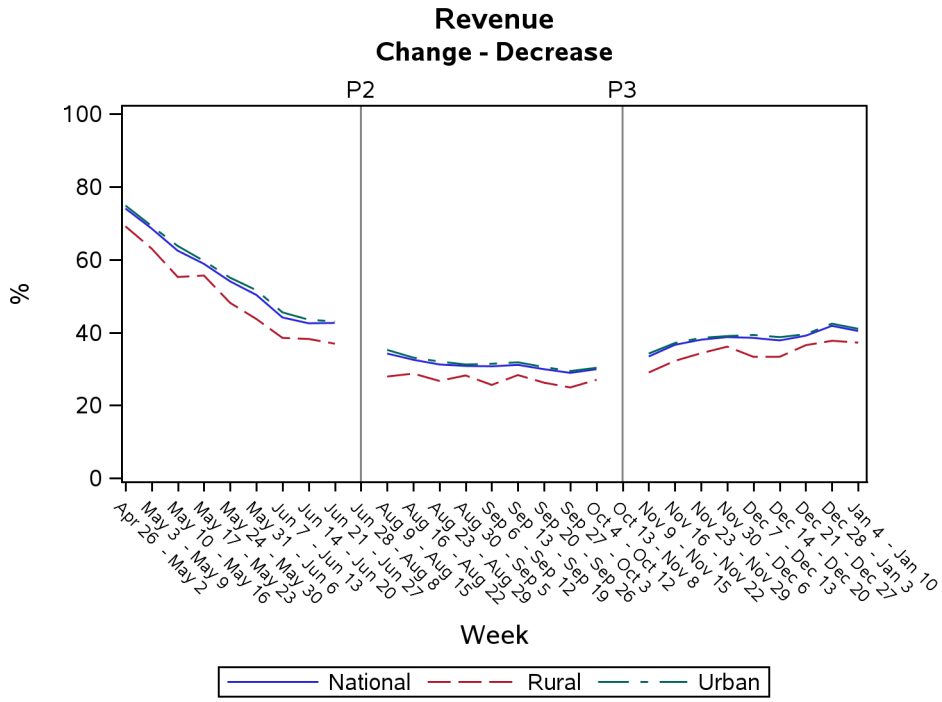
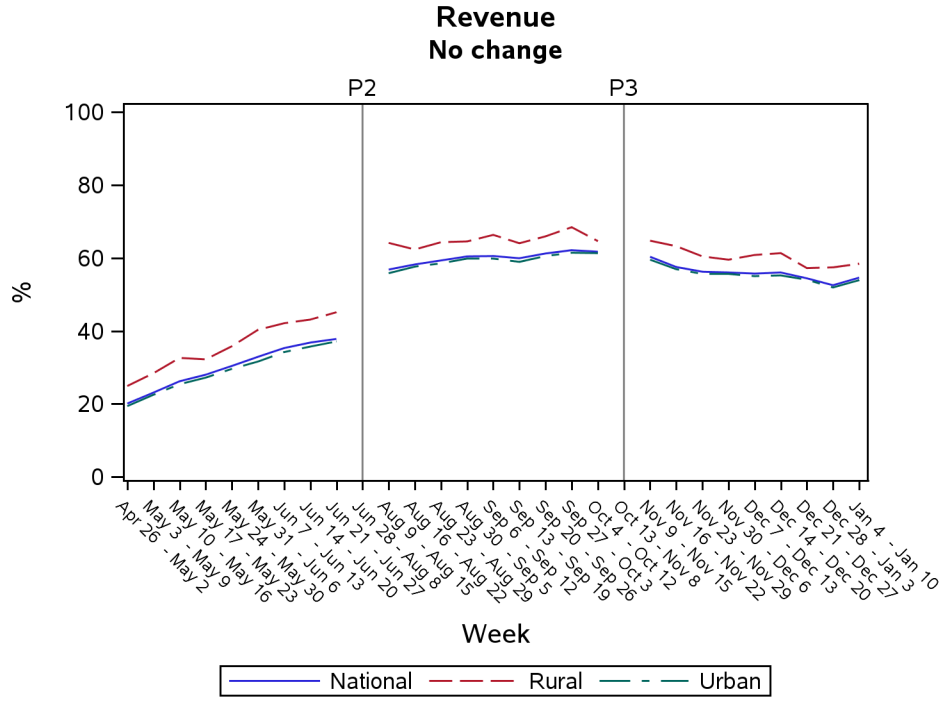
%
Week
National
Rural
Urban

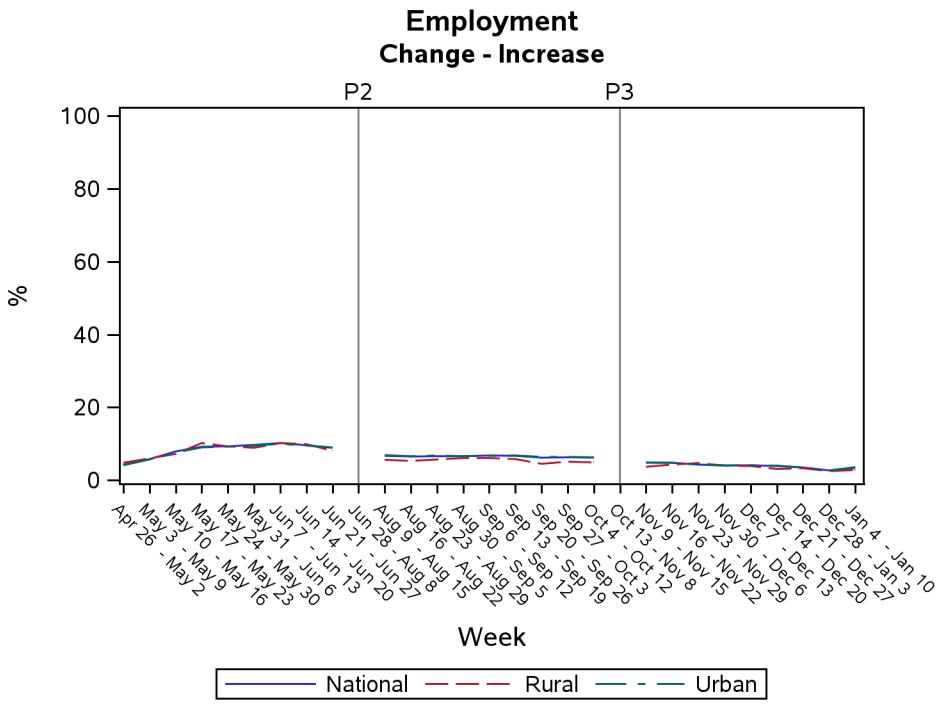

Overall
Moderate Positive Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Rural
Urban

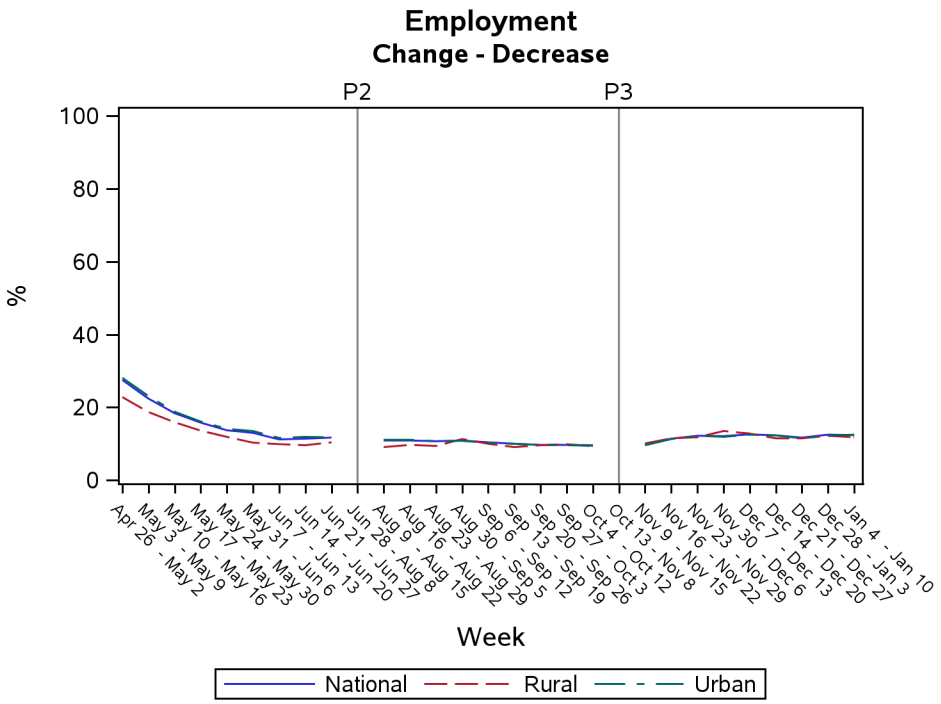

Overall
Large Positive Effect
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Rural
Urban

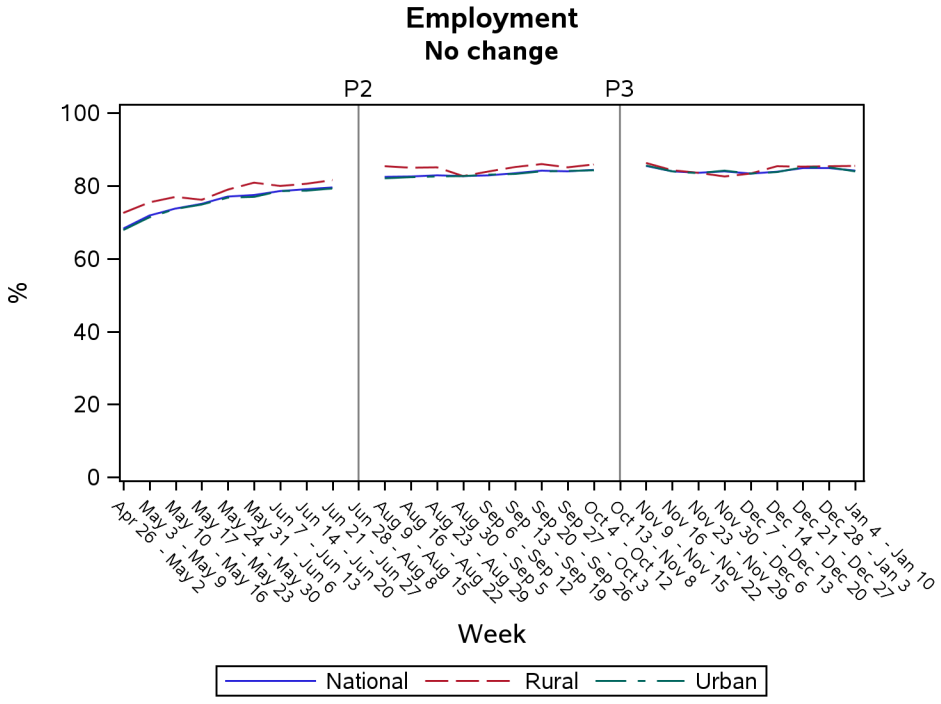

Revenue
Change - Increase
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Rural
Urban

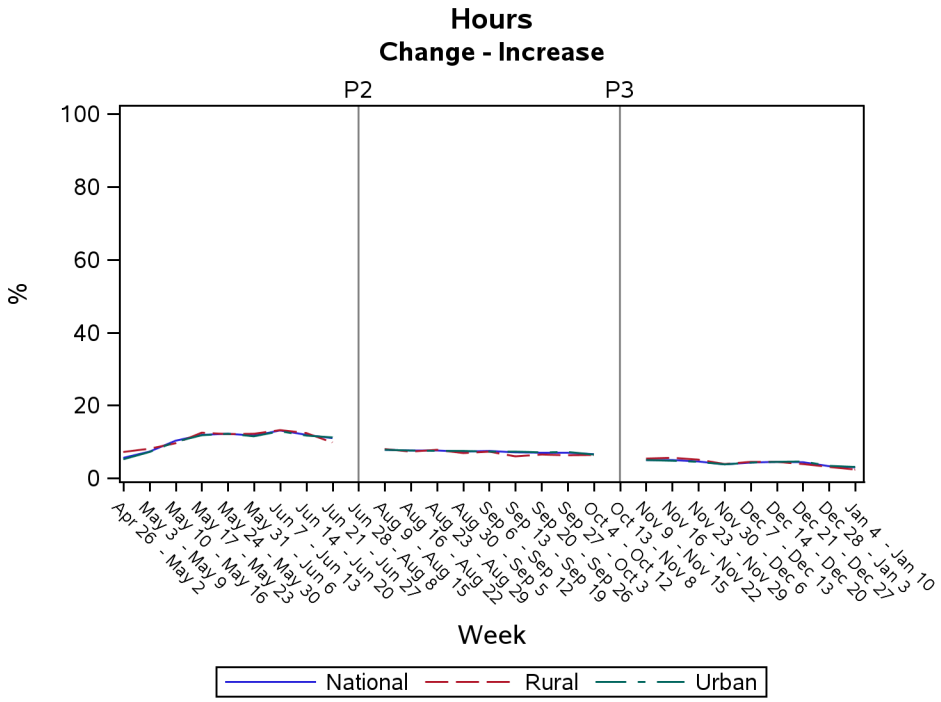

Revenue
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Rural
Urban

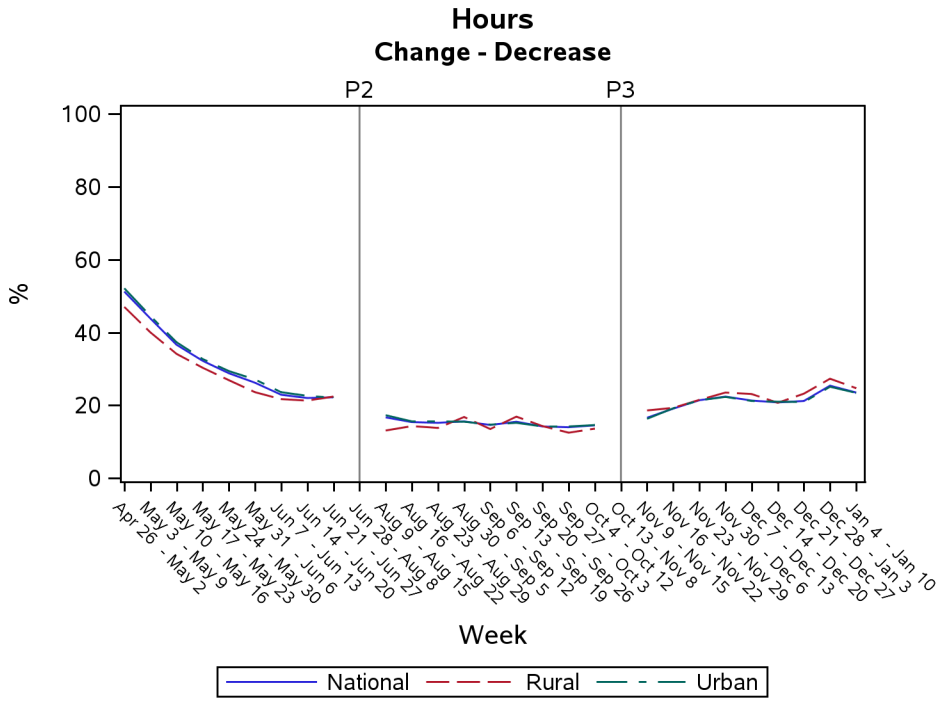

Revenue
No change
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Rural
Urban

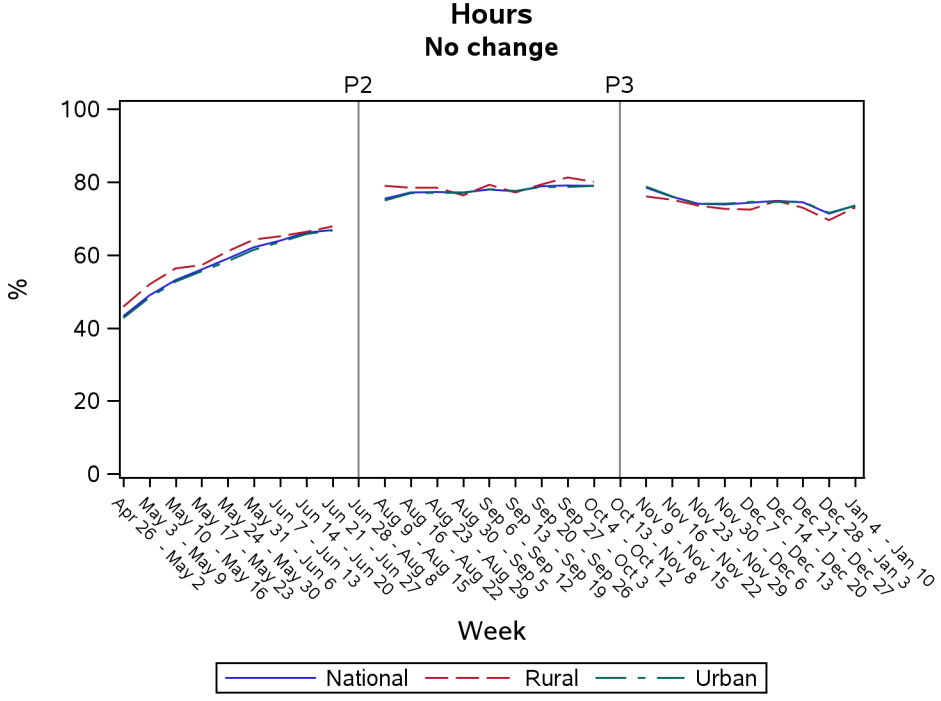

Employment
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
Rural
Urban

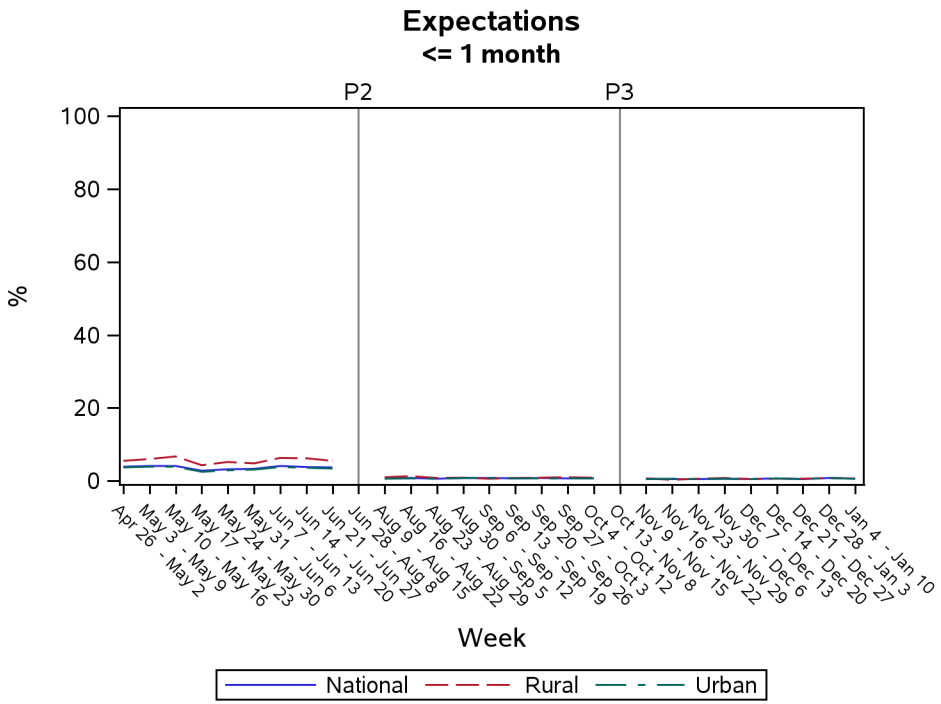

Employment
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
Rural
Urban

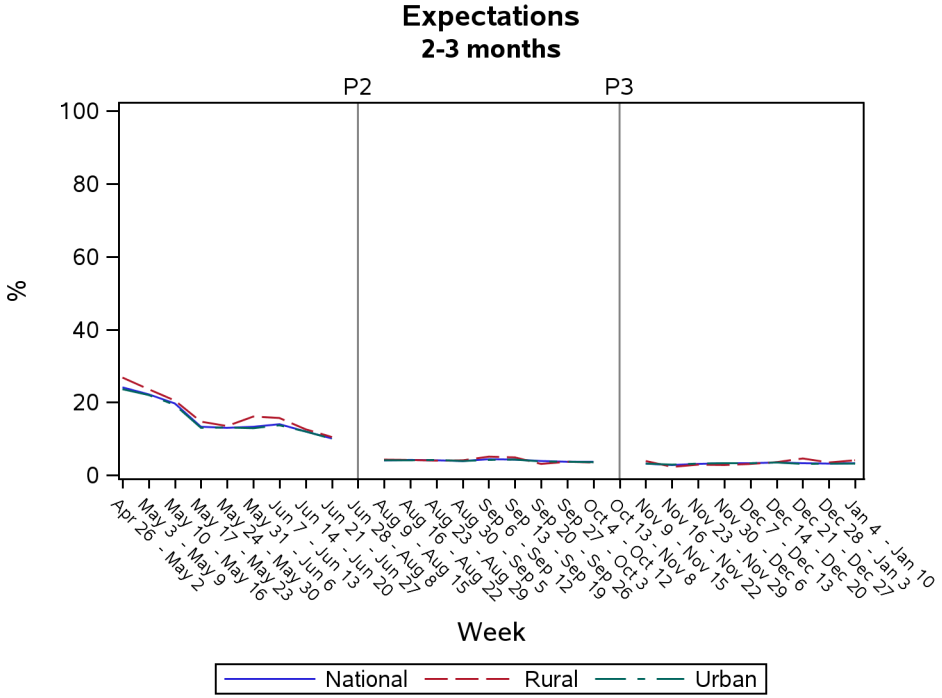

Employment
No change
P2
P3
100
80
60
40
20
0
%
Week
National
Rural
Urban

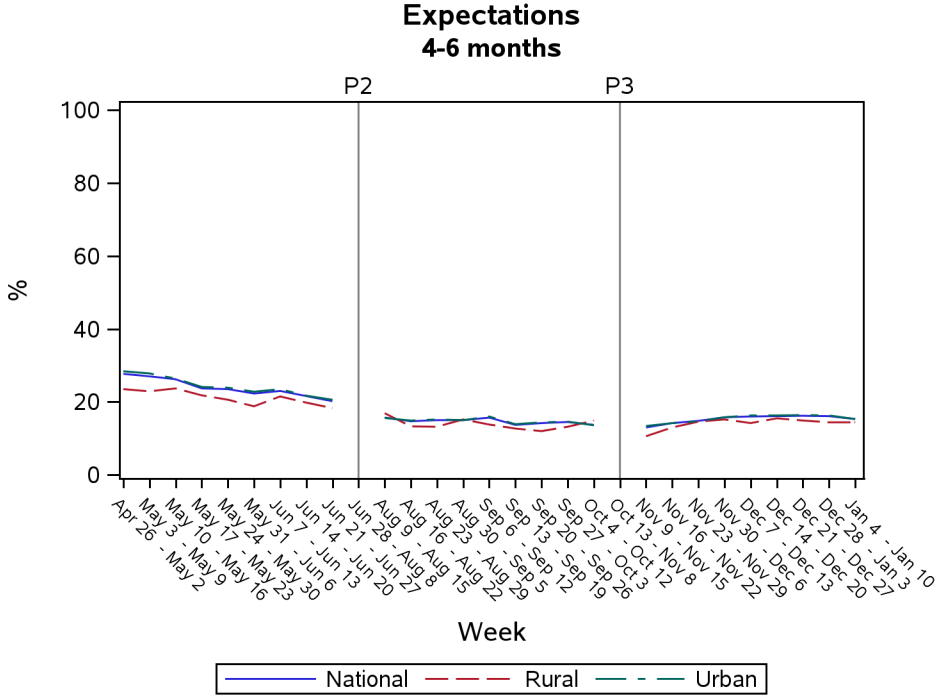

Hours
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
Rural
Urban

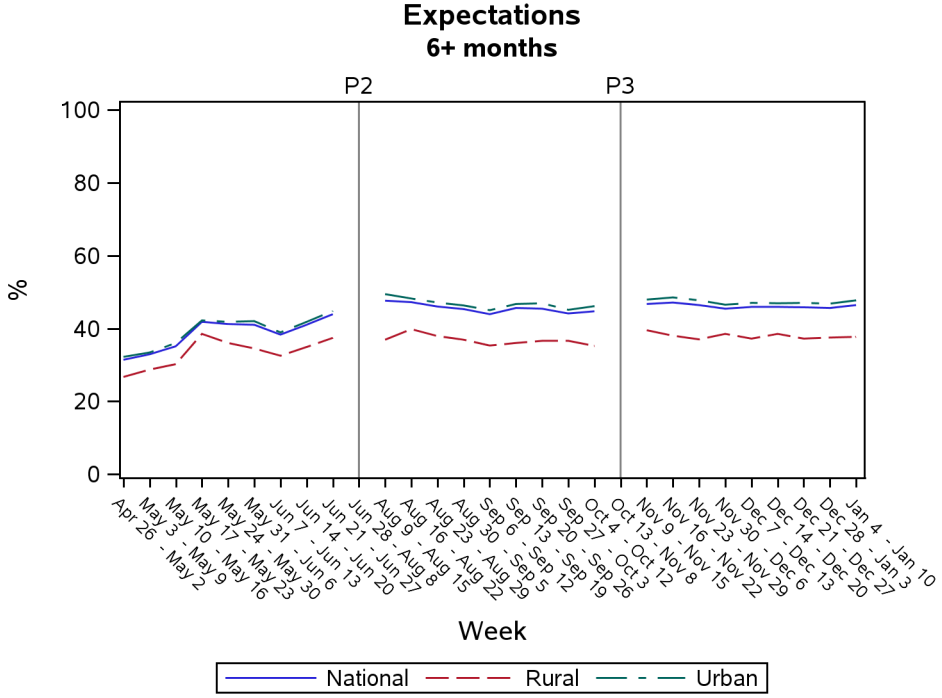

Hours
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
Rural
Urban

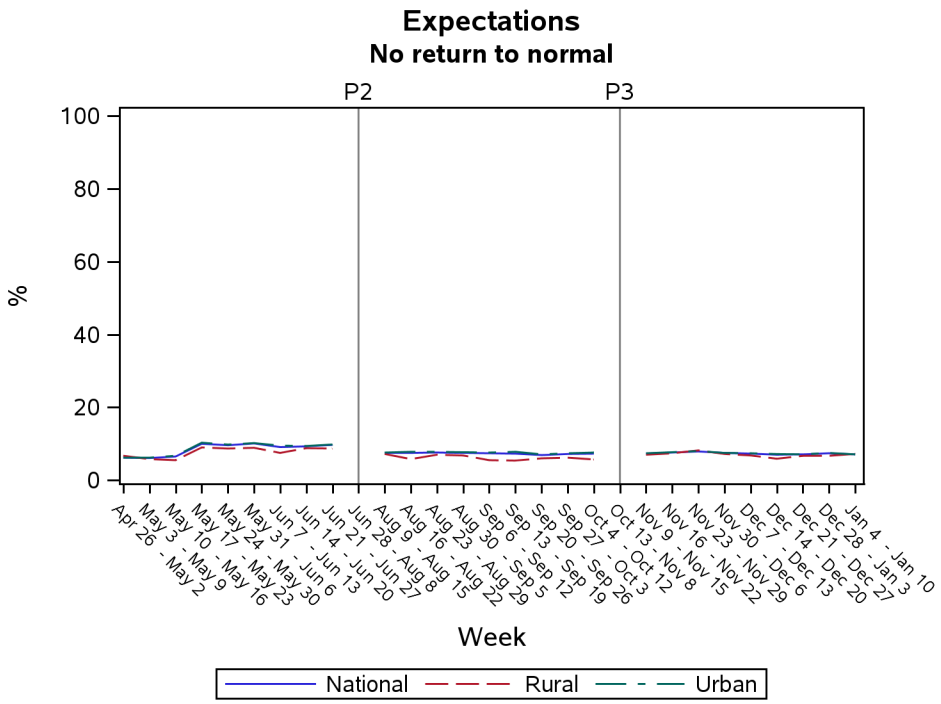

Hours
No change
P2
P3
100
80
60
40
20
0
%
Week
National
Rural
Urban

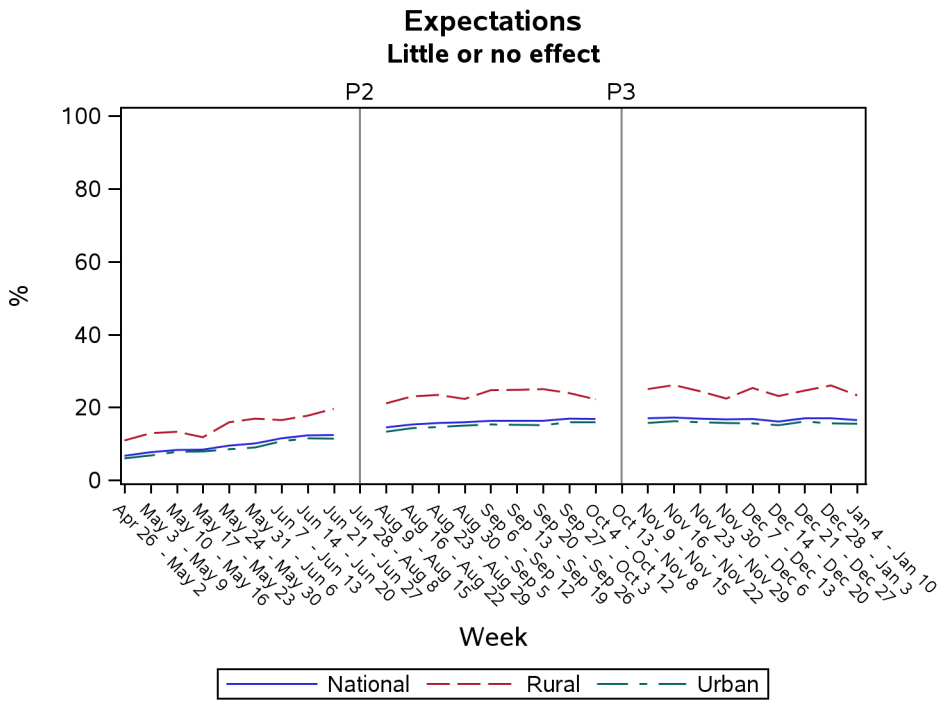

Expectations
<= 1 month
P2
P3
100
80
60
40
20
0
%
Week
National
Rural
Urban

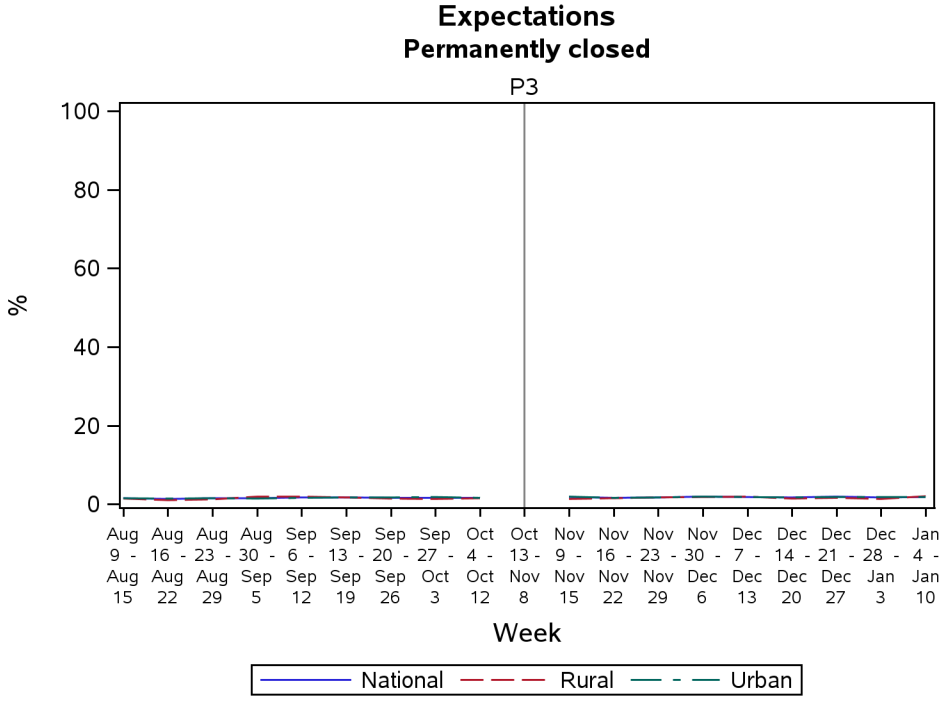

Expectations
2-3 months
P2
P3
100
80
60
40
20
0
%
Week
National
Rural
Urban

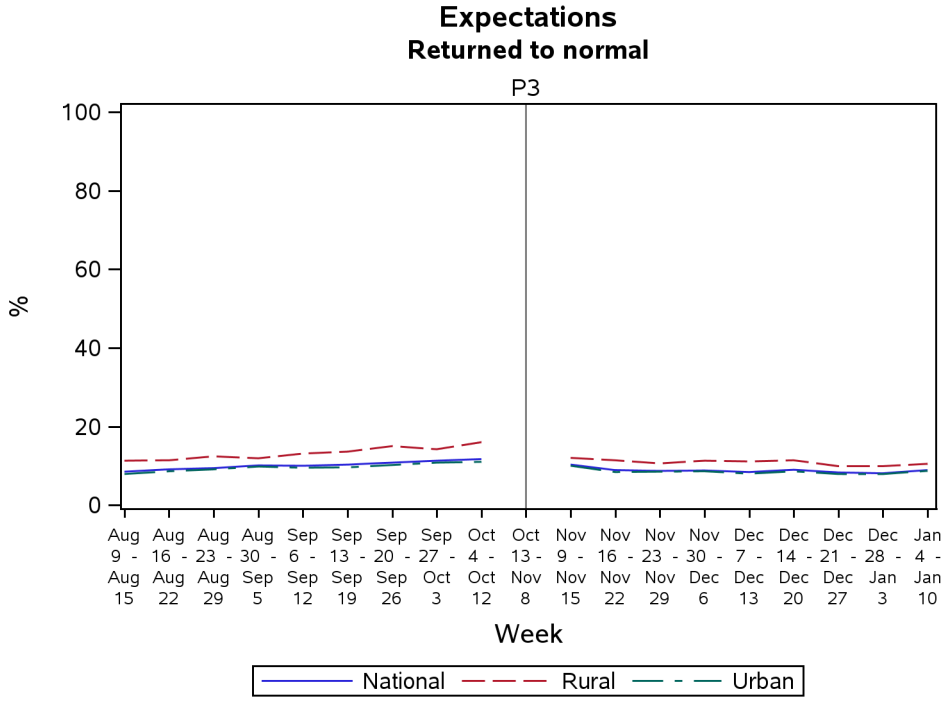

Expectations
4-6 months
P2
P3
100
80
60
40
20
0
%
Week
National
Rural
Urban


Expectations
6+ months
P2
P3
100
80
60
40
20
0
%
Week
National
Rural
Urban


Expectations
No return to normal
P2
P3
100
80
60
40
20
0
%
Week
National
Rural
Urban


Expectations
Little or no effect
P2
P3
100
80
60
40
20
0
%
Week
National
Rural
Urban


Expectations
Permanently closed
P3
100
80
60
40
20
0
%
Week
National
Rural
Urban


Expectations
Returned to normal
P3
100
80
60
40
20
0
%
Week
National
Rural
Urban

Appendix B. Owner Characteristics Published Estimates (Sex)

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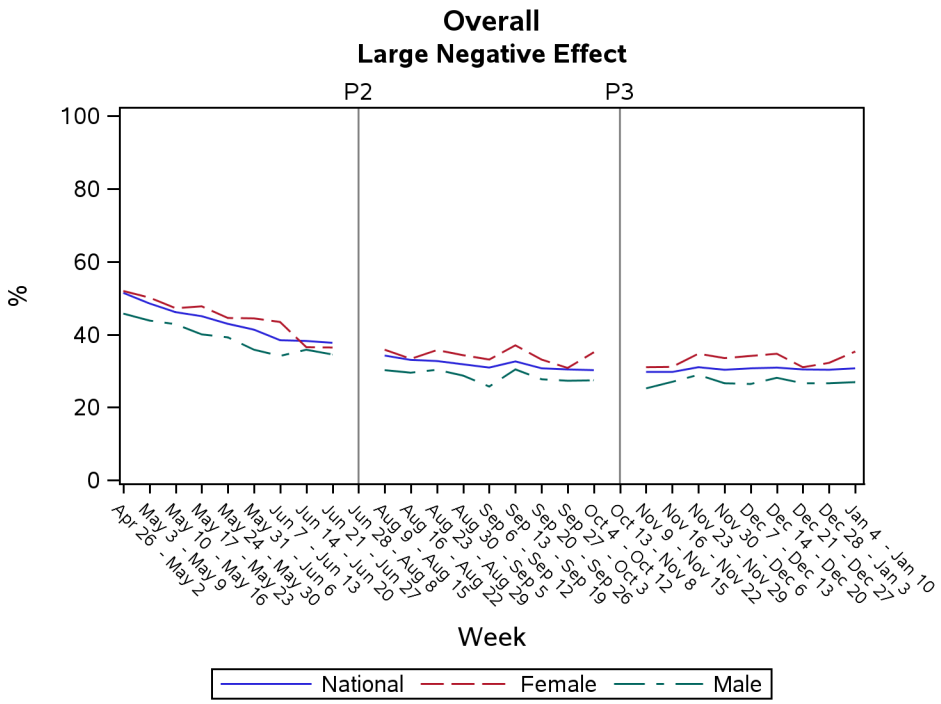
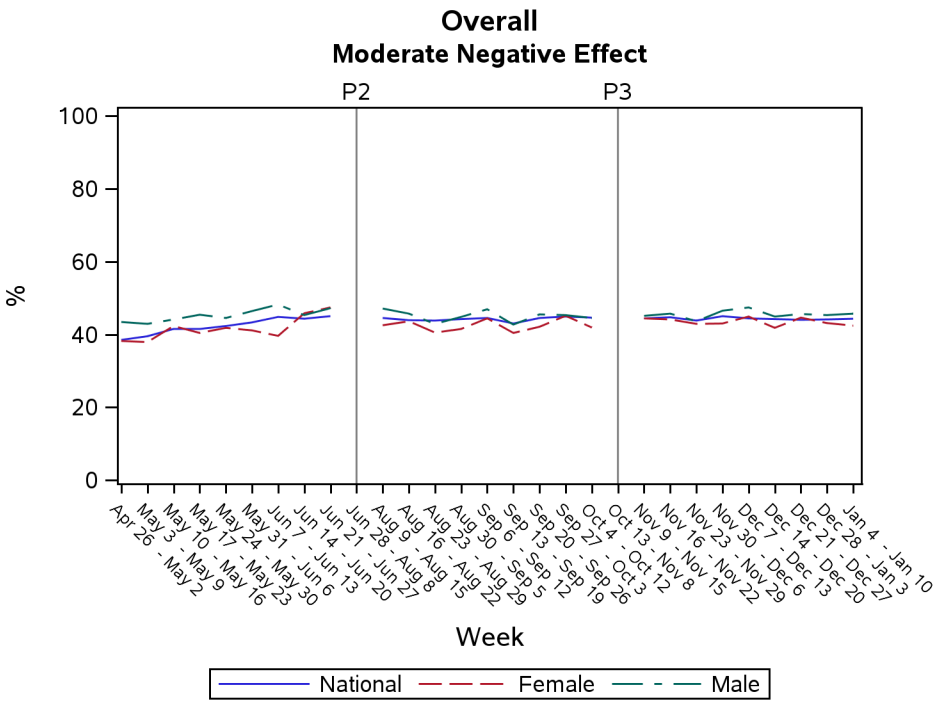
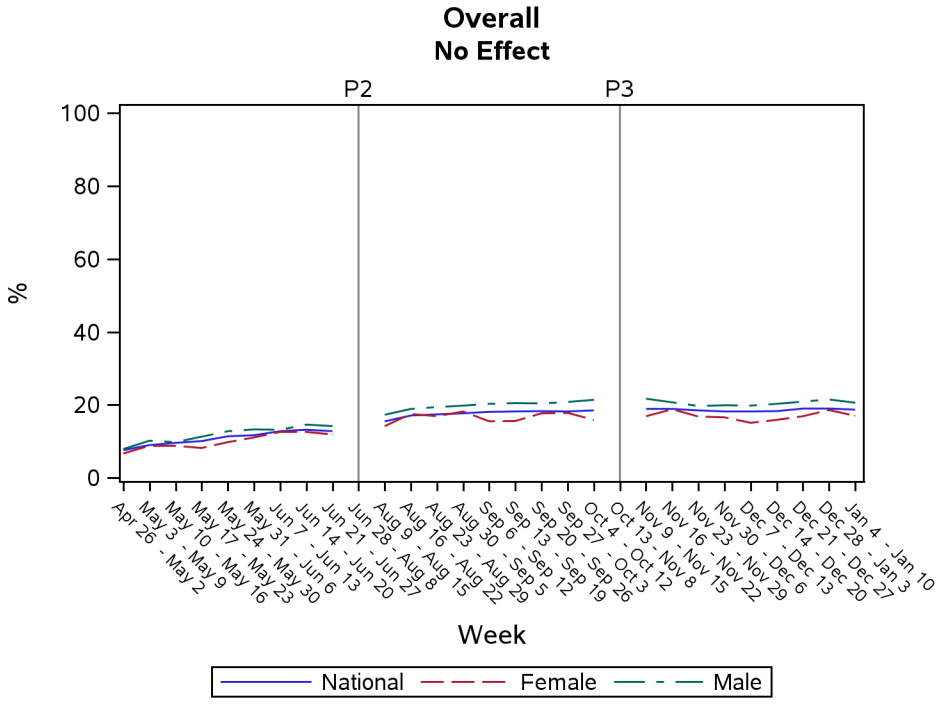
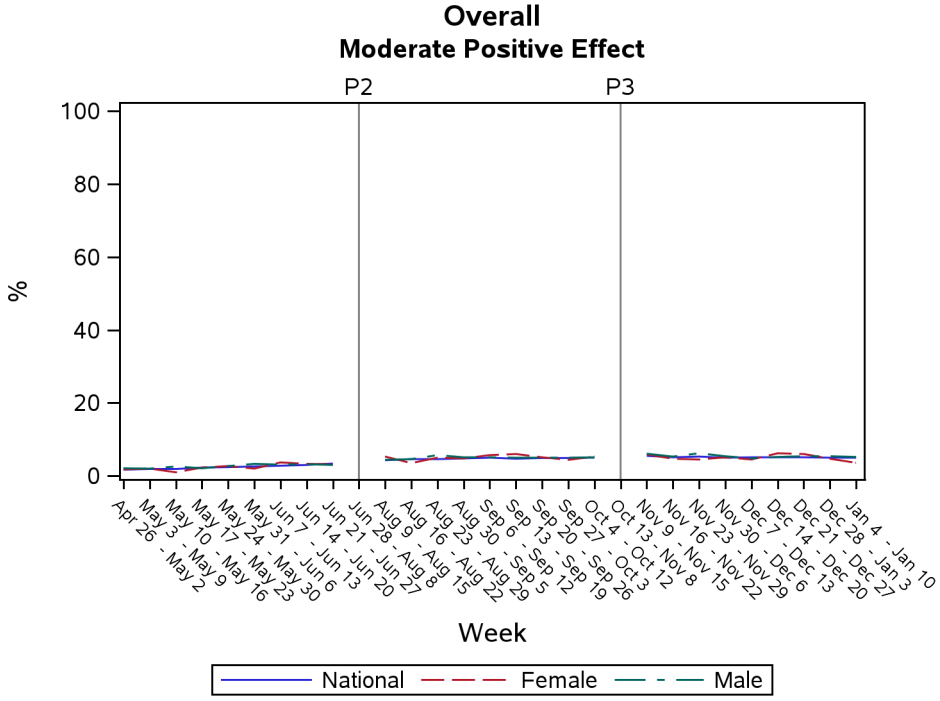
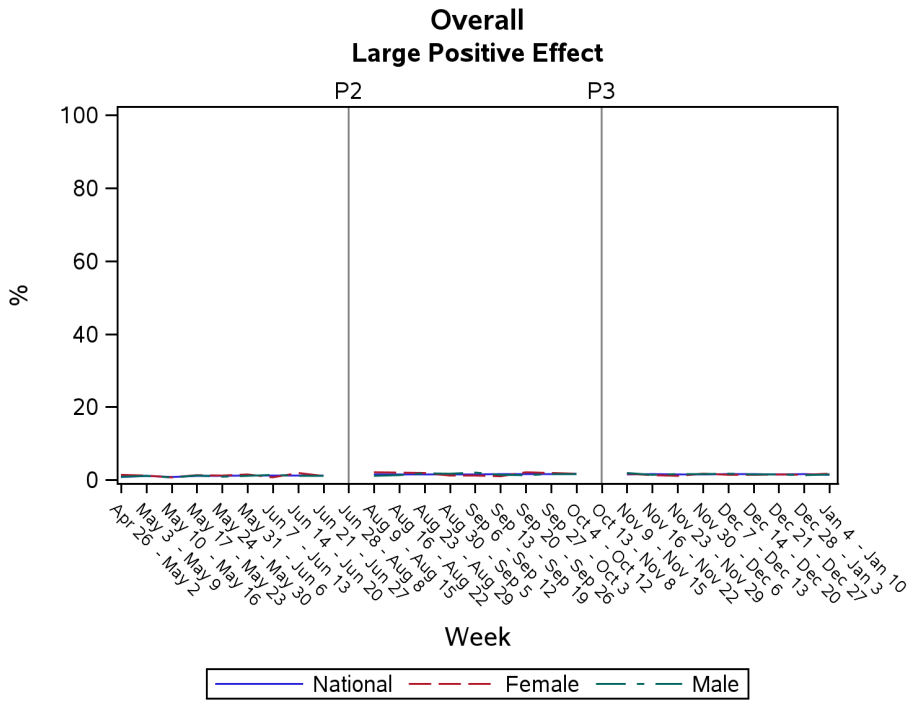
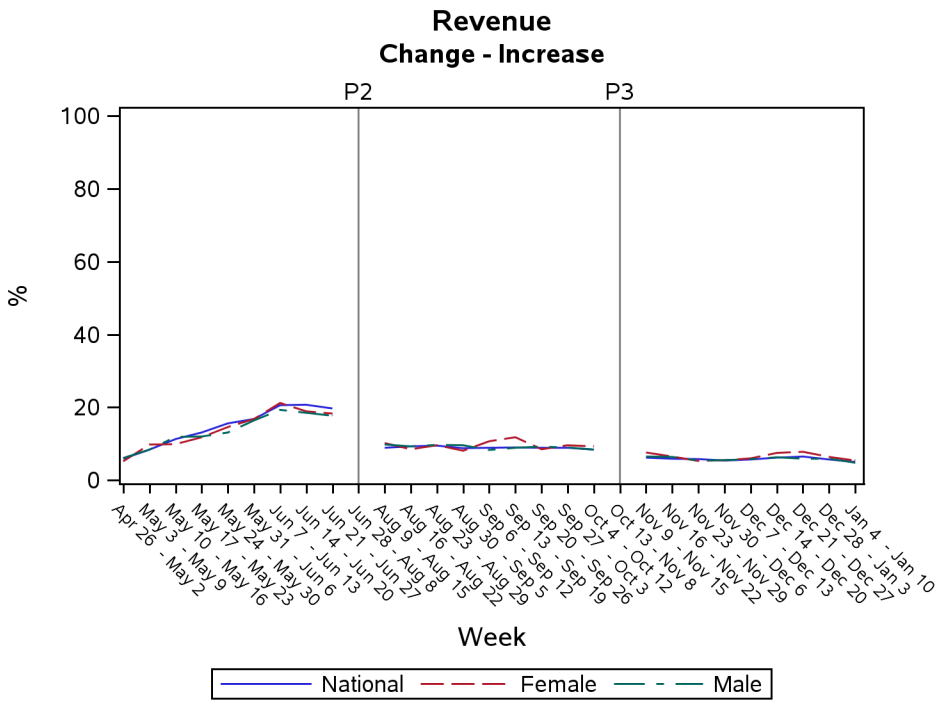

Overall
Large Negative Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Female
Male

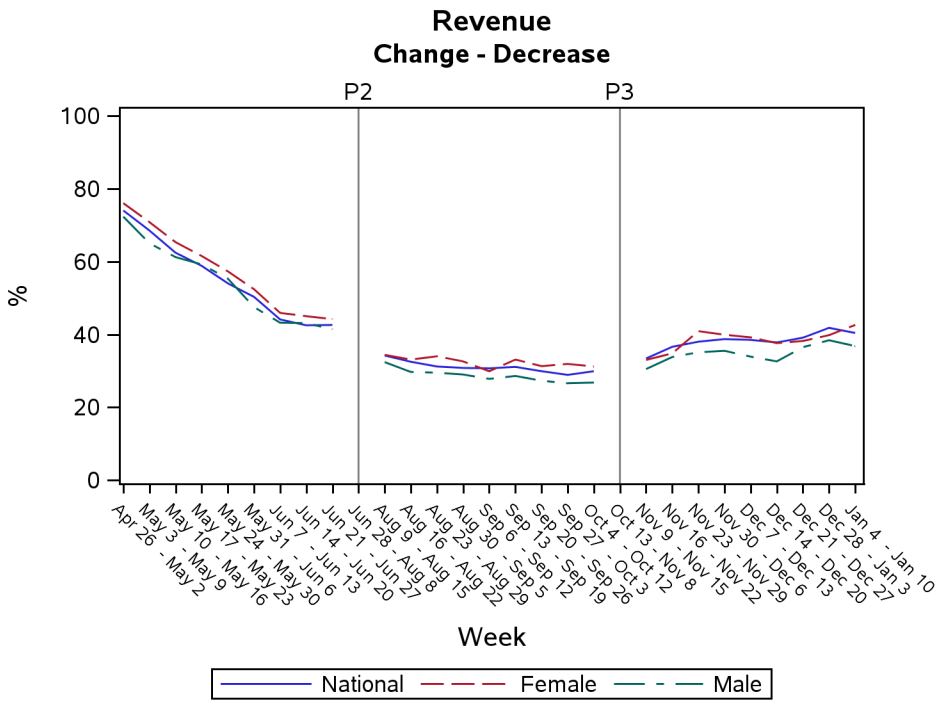

Overall
Moderate Negative Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Female
Male

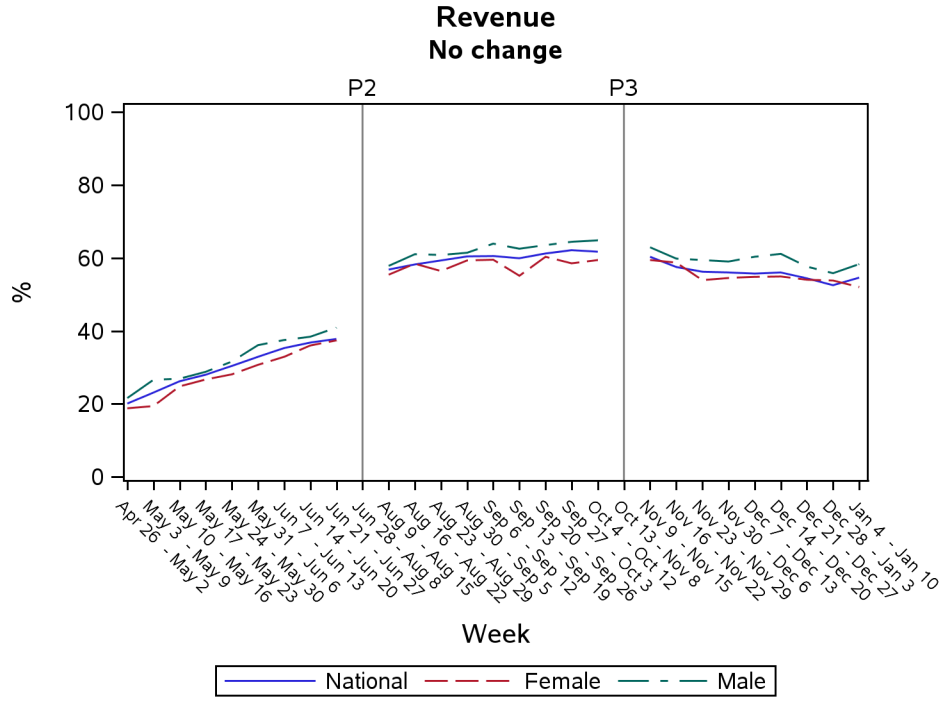

Overall
No Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Female
Male

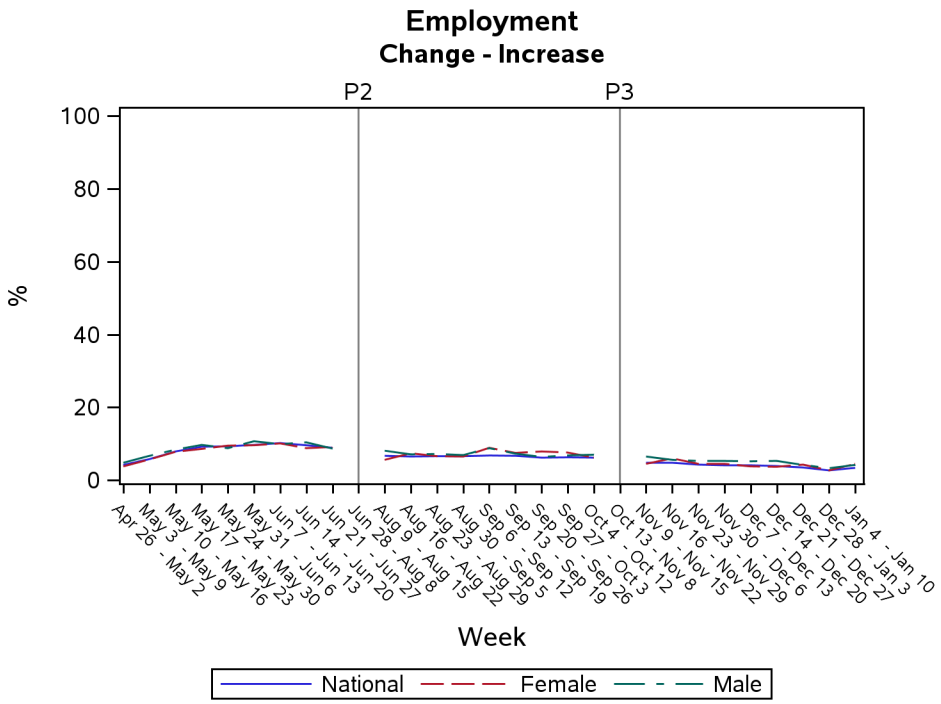

Overall
Moderate Positive Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Female
Male

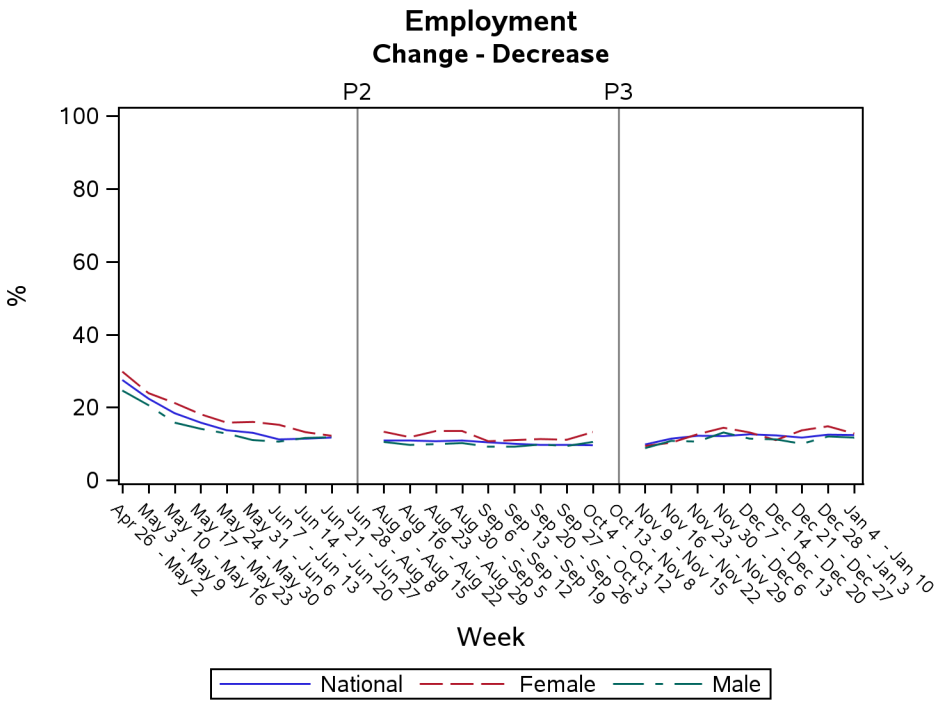

Overall
Large Positive Effect
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Female
Male

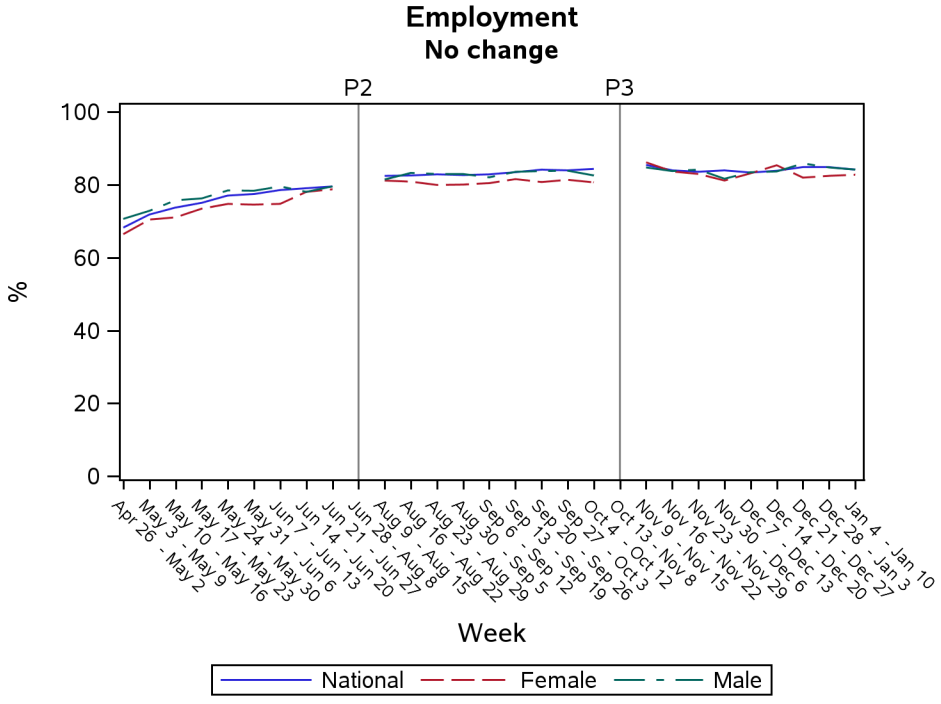

Revenue
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
Female
Male

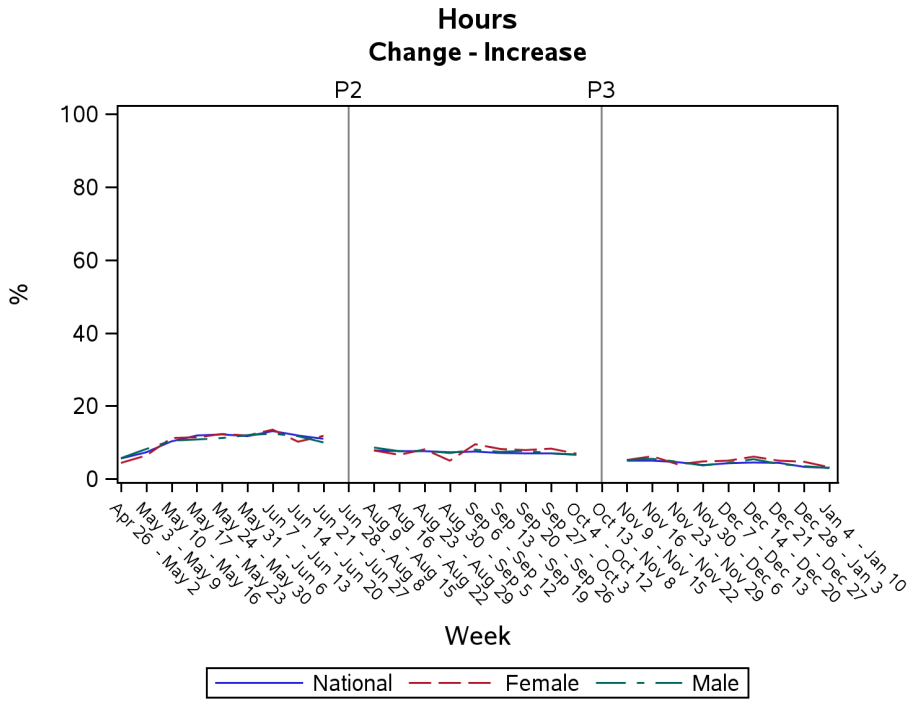

Revenue
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
Female
Male

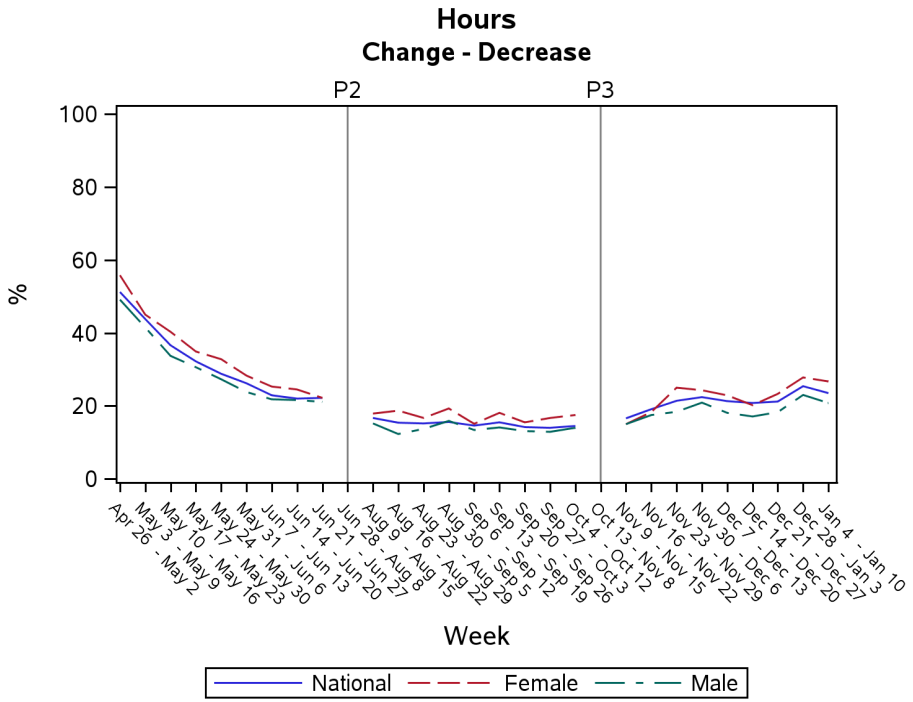

Revenue
No change
P2
P3
100
80
60
40
20
0
%
Week
National
Female
Male

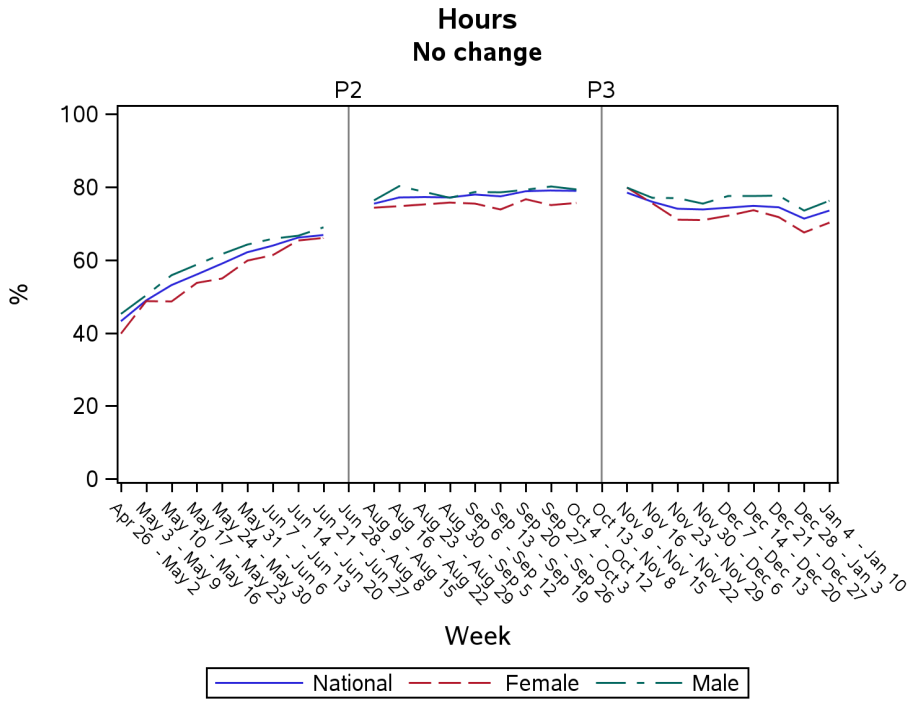

Employment
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
Female
Male

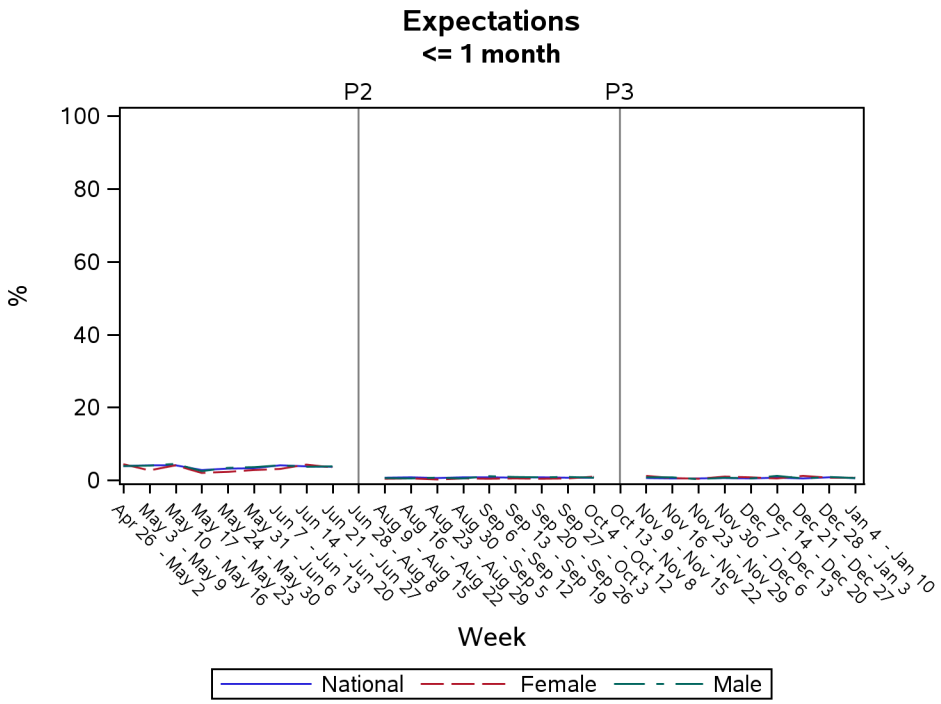

Employment
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
Female
Male

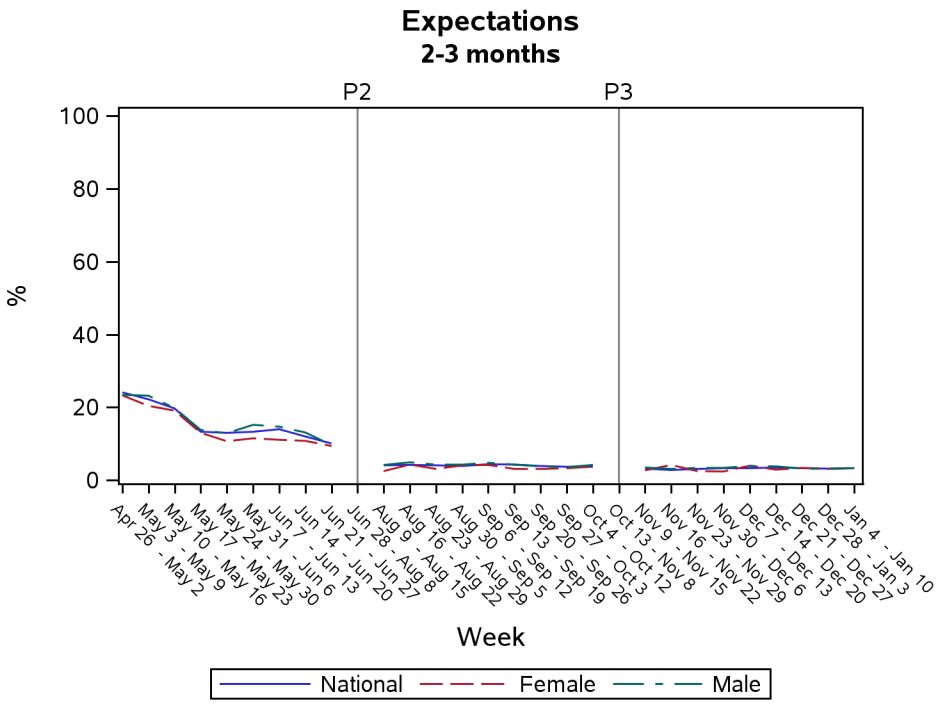

Employment
No change
P2
P3
100
80
60
40
20
0
%
Week
National
Female
Male

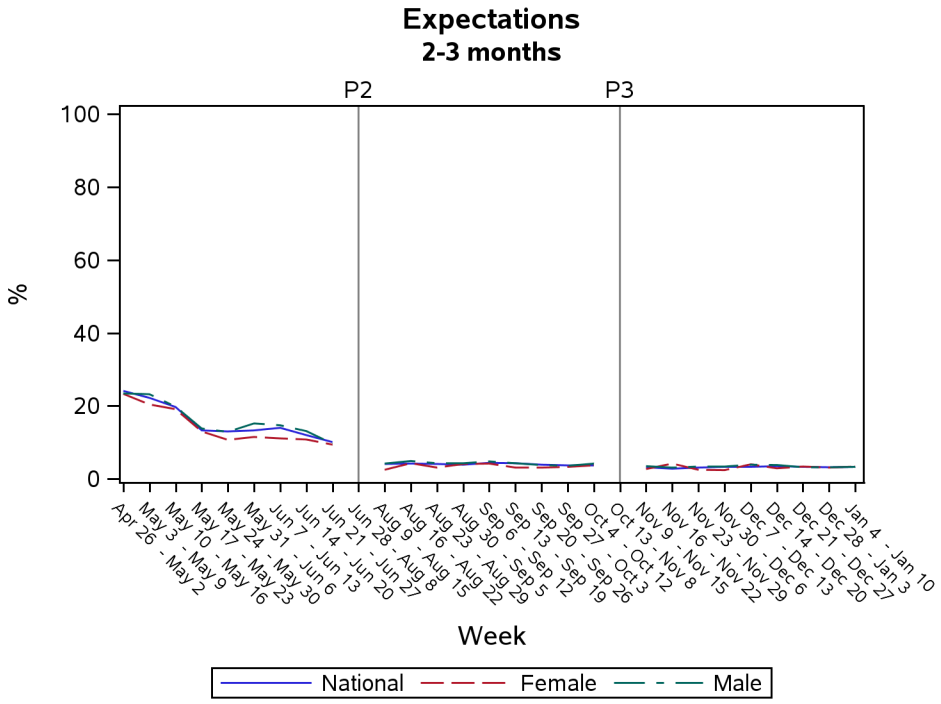

Hours
Change - Increase
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Female
Male

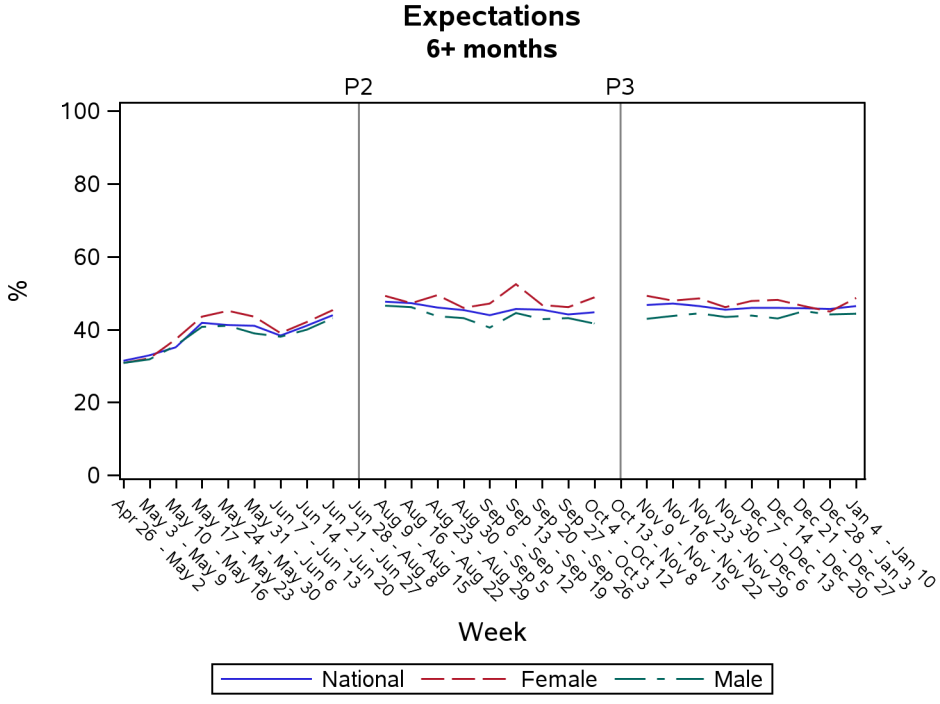

Hours
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Female
Male

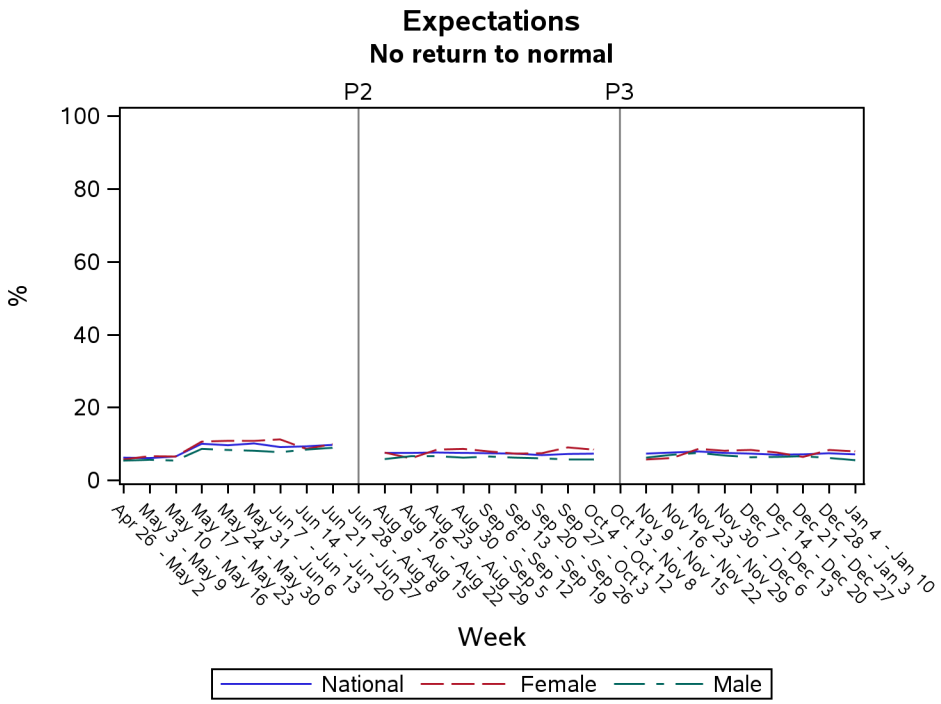

Hours
No change
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Female
Male

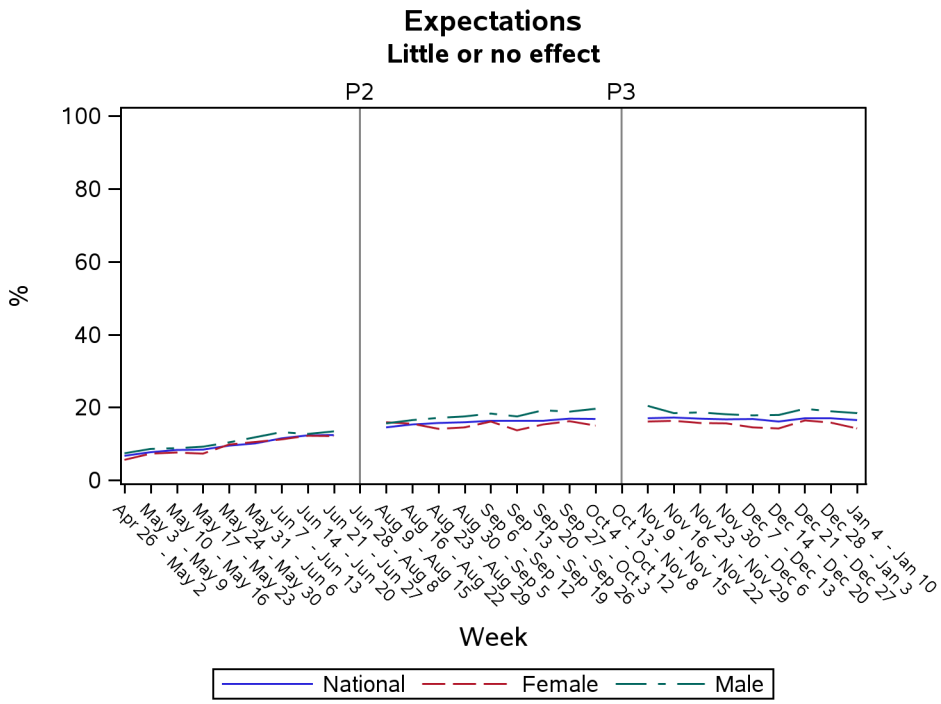

Expectations
<= 1 month
P2
P3
100
80
60
40
20
0
%
Week
National
Female
Male

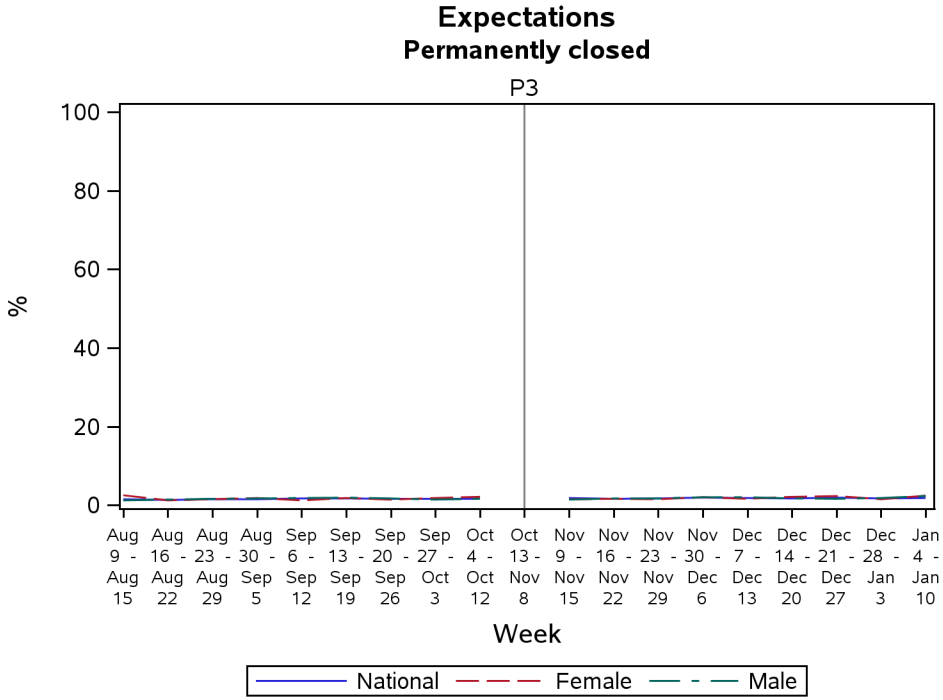

Expectations
2-3 months
P2
P3
100
80
60
40
20
0
%
Week
National
Female
Male

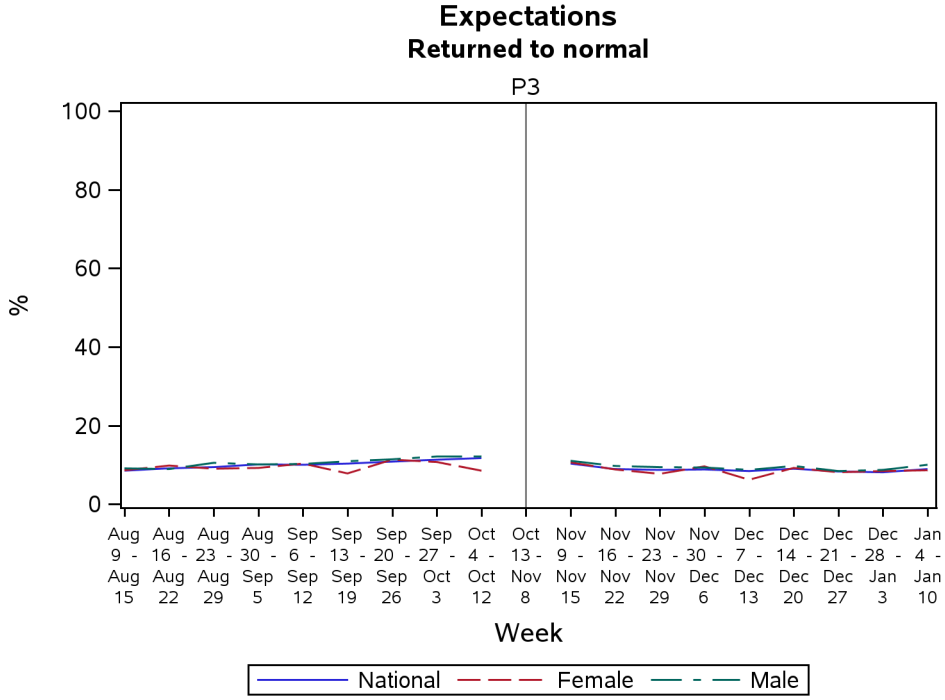

Expectations
2-3 months
P2
P3
100
80
60
40
20
0
%
Week
National
Female
Male


Expectations
6+ months
P2
P3
100
80
60
40
20
0
%
Week
National
Female
Male


Expectations
No return to normal
P2
P3
100
80
60
40
20
0
%
Week
National
Female
Male


Expectations
Little or no effect
P2
P3
100
80
60
40
20
0
%
Week
National
Female
Male


Expectations
Permanently closed
P3
100
80
60
40
20
0
%
Week
National
Female
Male


Expectations
Returned to normal
P3
100
80
60
40
20
0
%
Week
National
Female
Male

Appendix B. Owner Characteristics Published Estimates (Sex equally owned)

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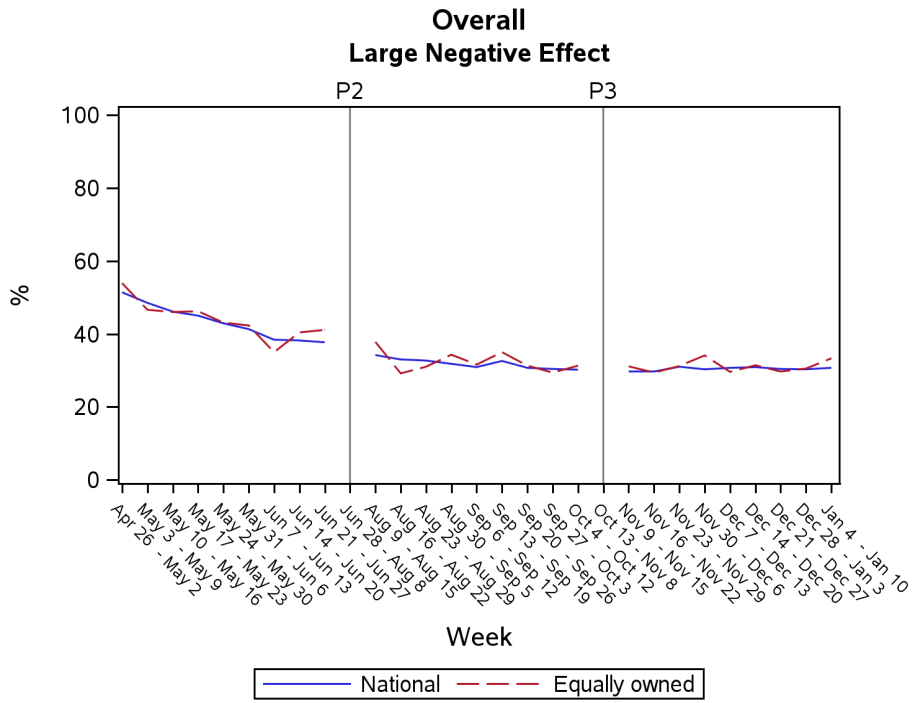
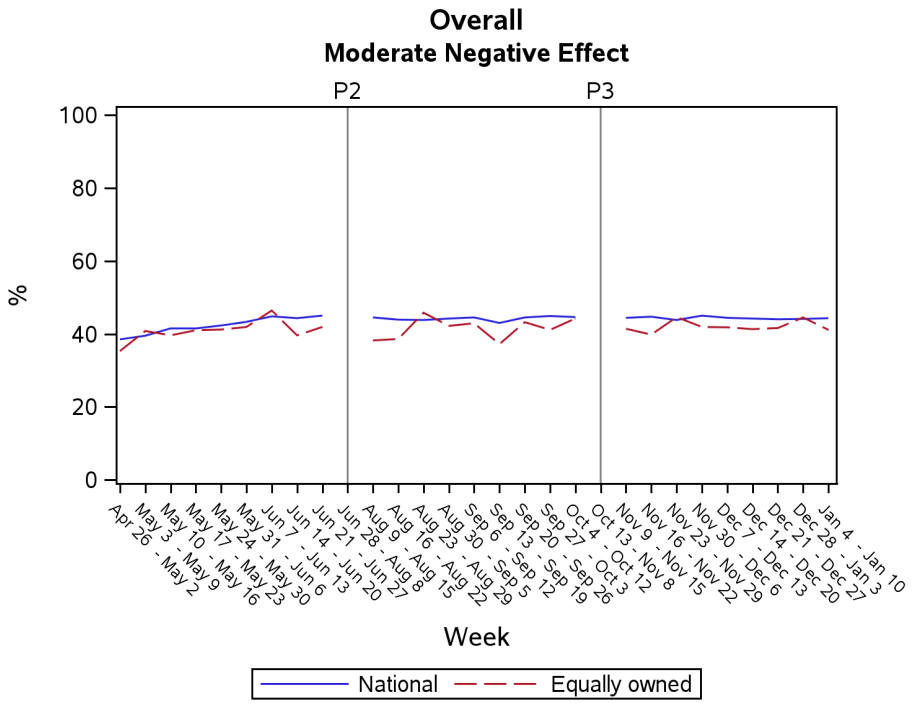
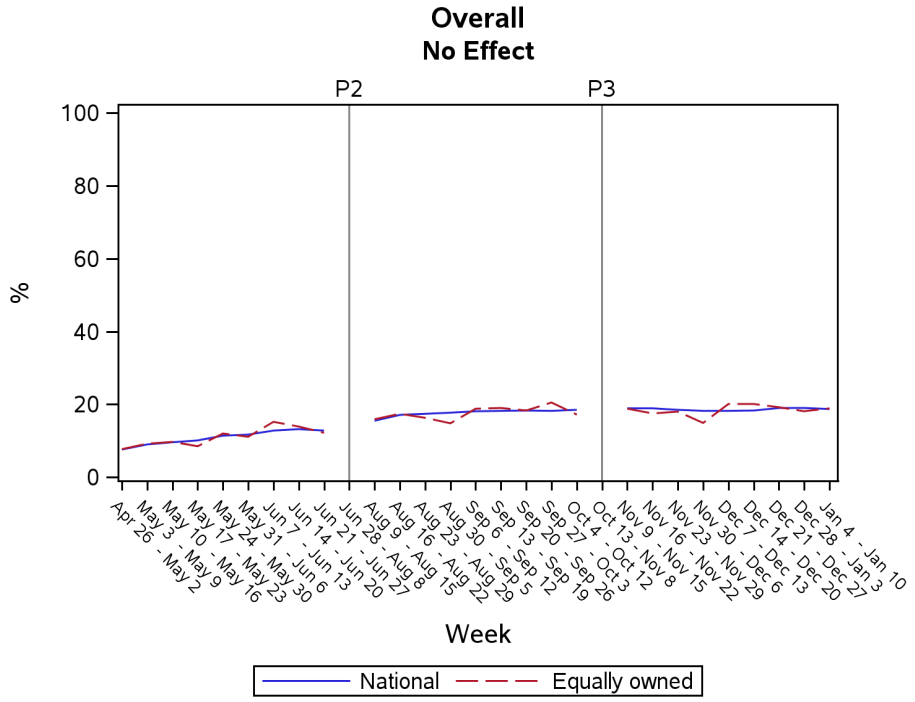
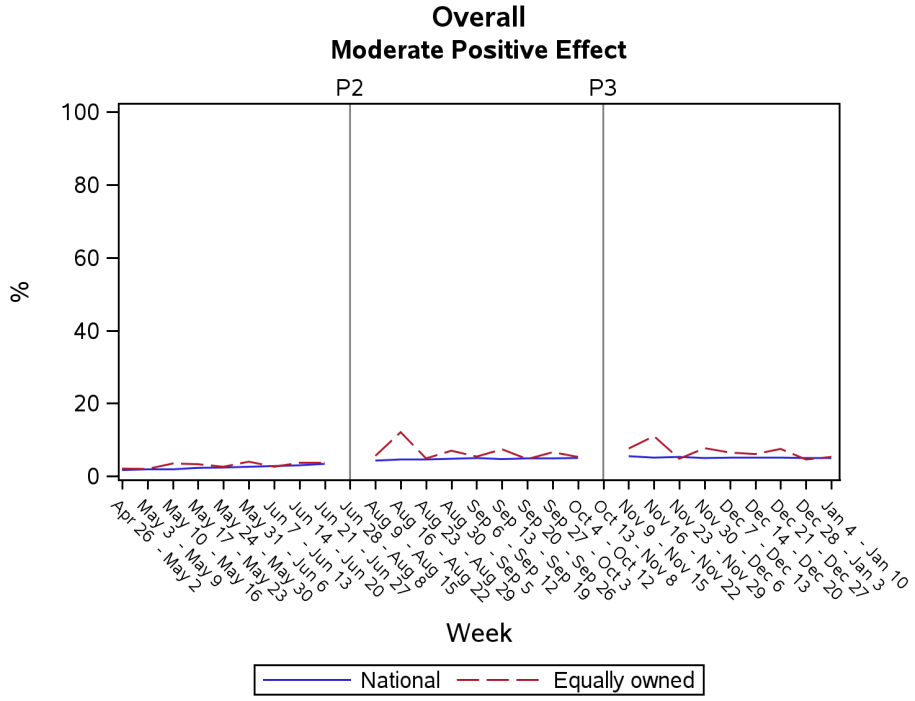
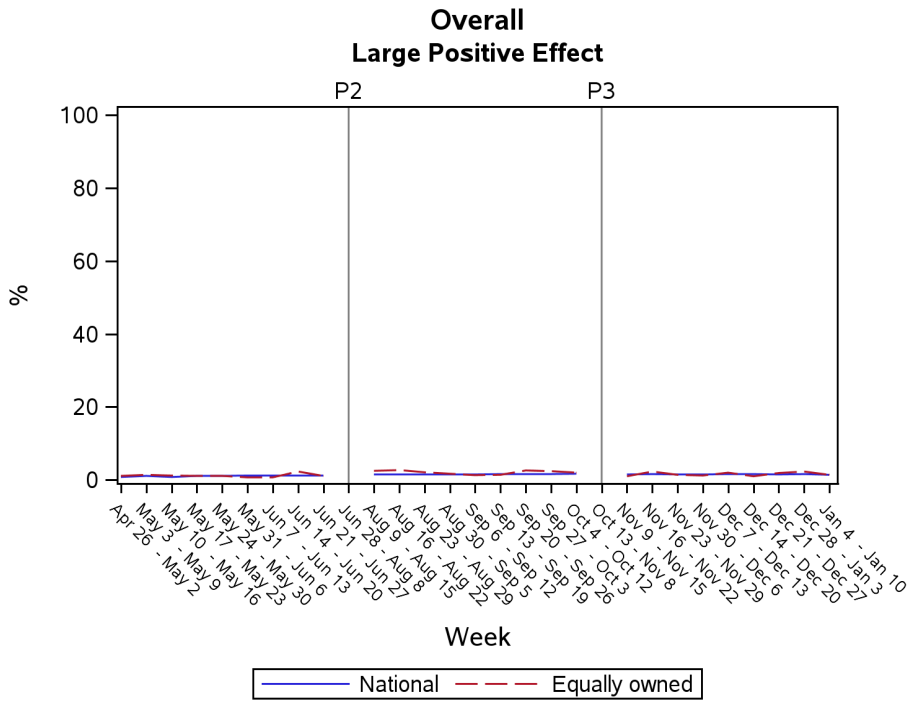
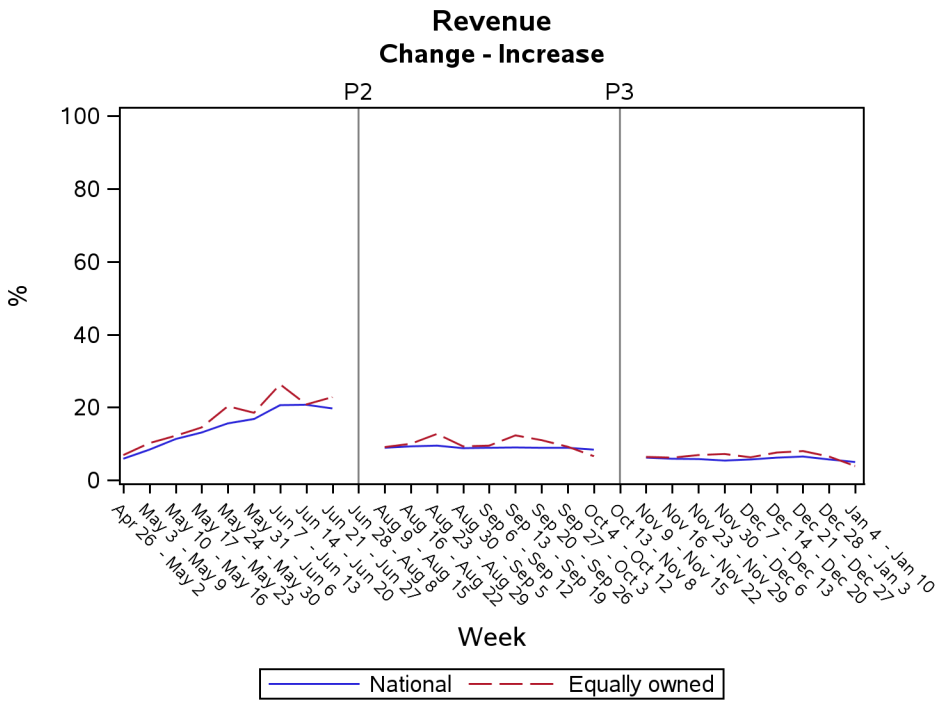

Overall
Large Negative Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Equally owned

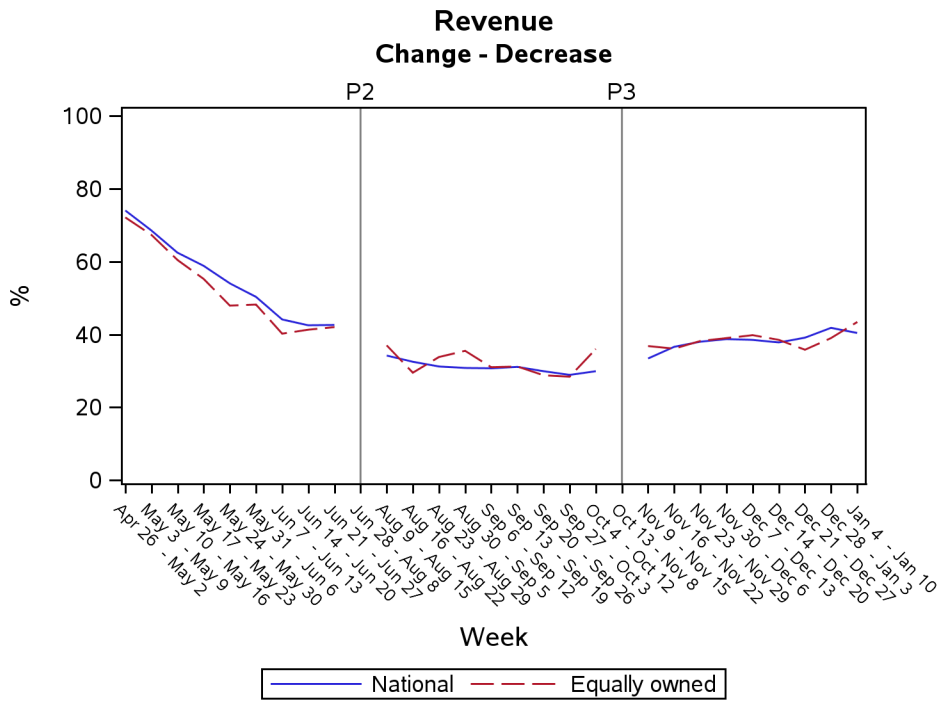

Overall
Moderate Negative Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Equally owned

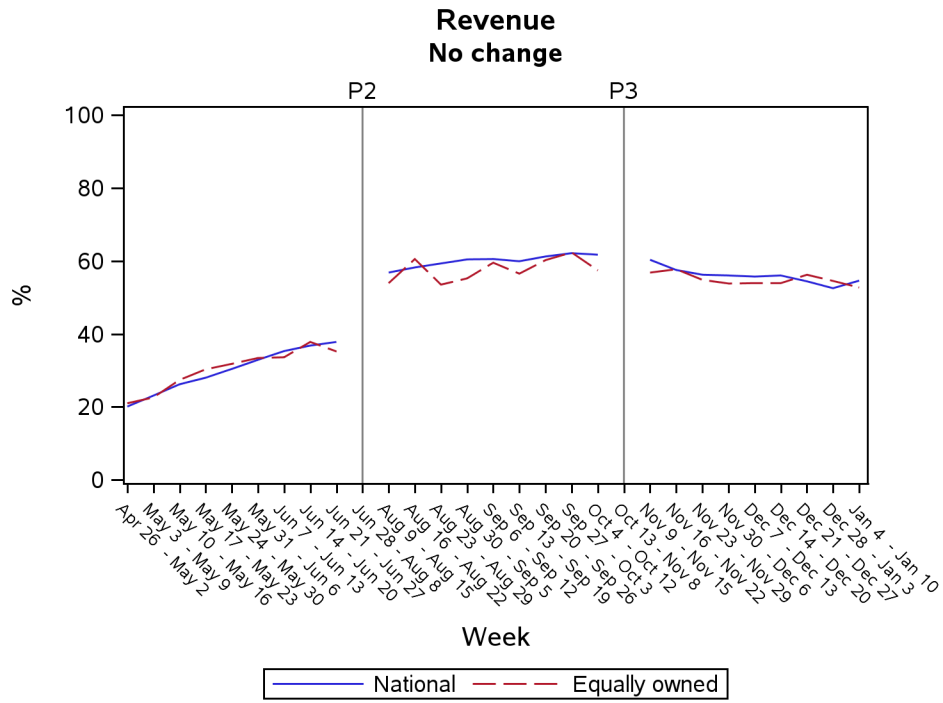

Overall
No Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Equally owned

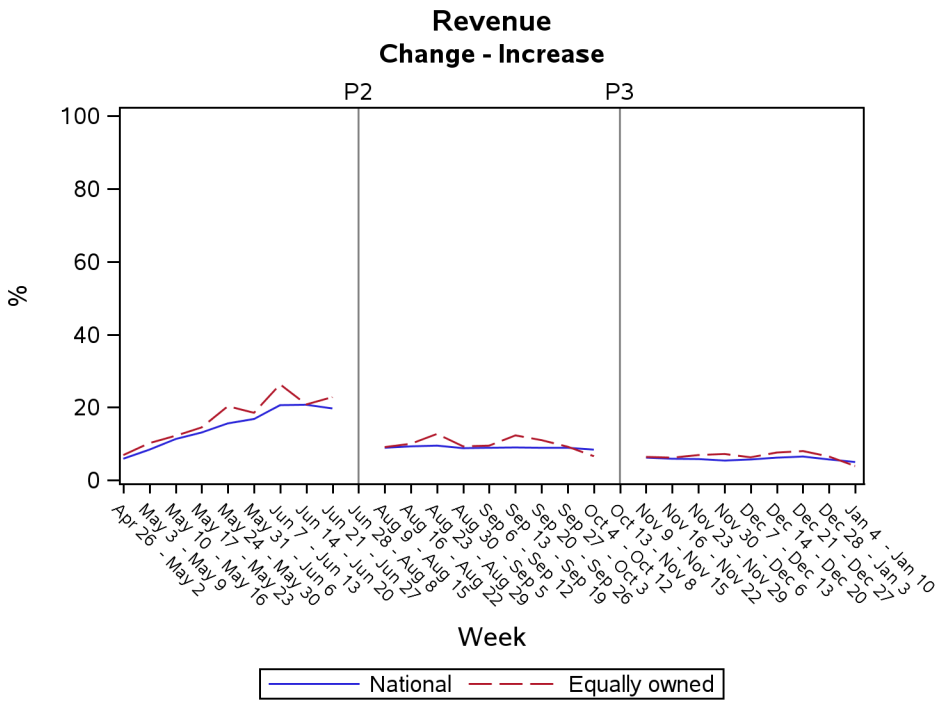

Overall
Moderate Positive Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Equally owned

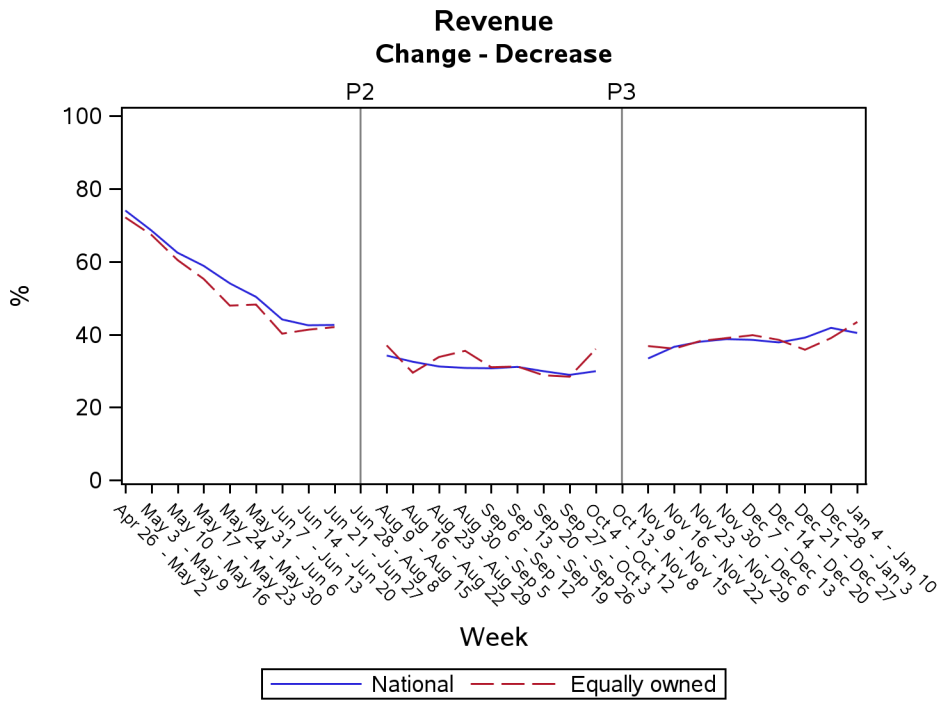

Overall
Large Positive Effect
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Equally owned

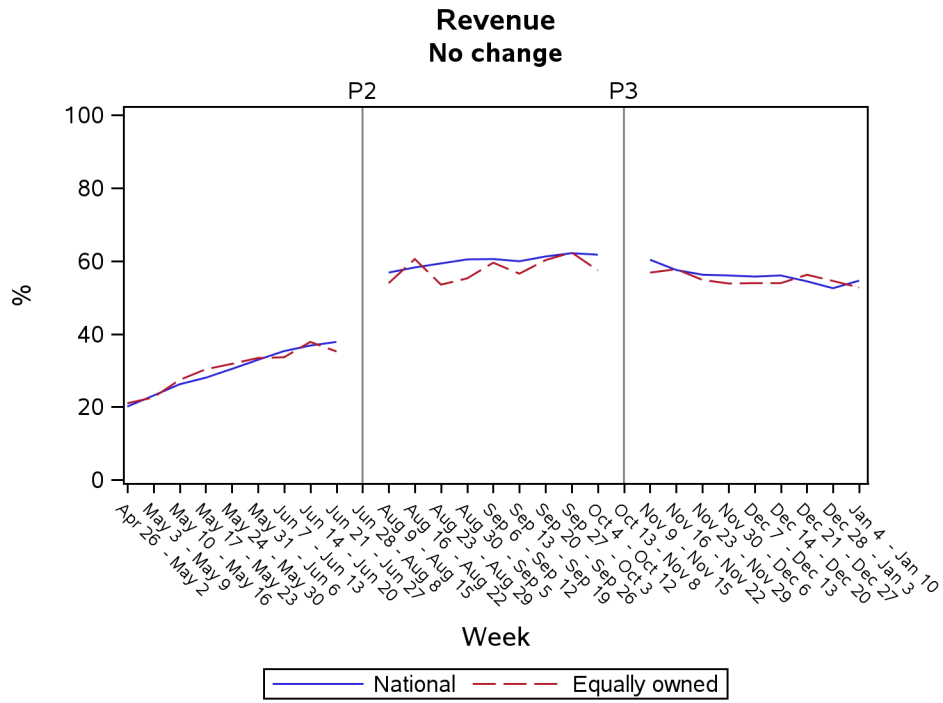

Revenue
Change - Increase
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Equally owned

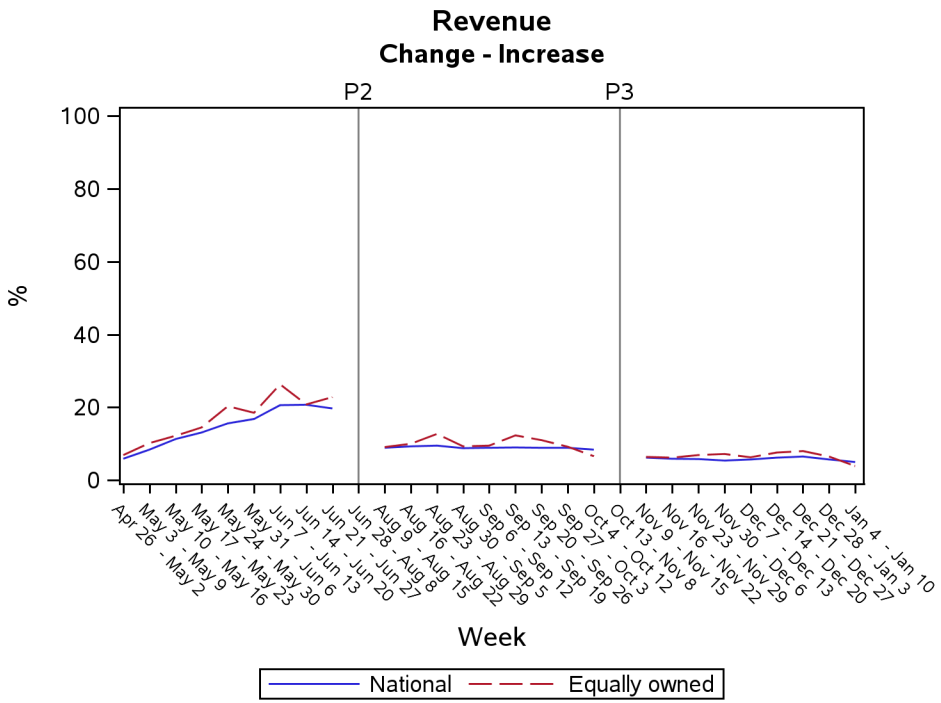

Revenue
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Equally owned

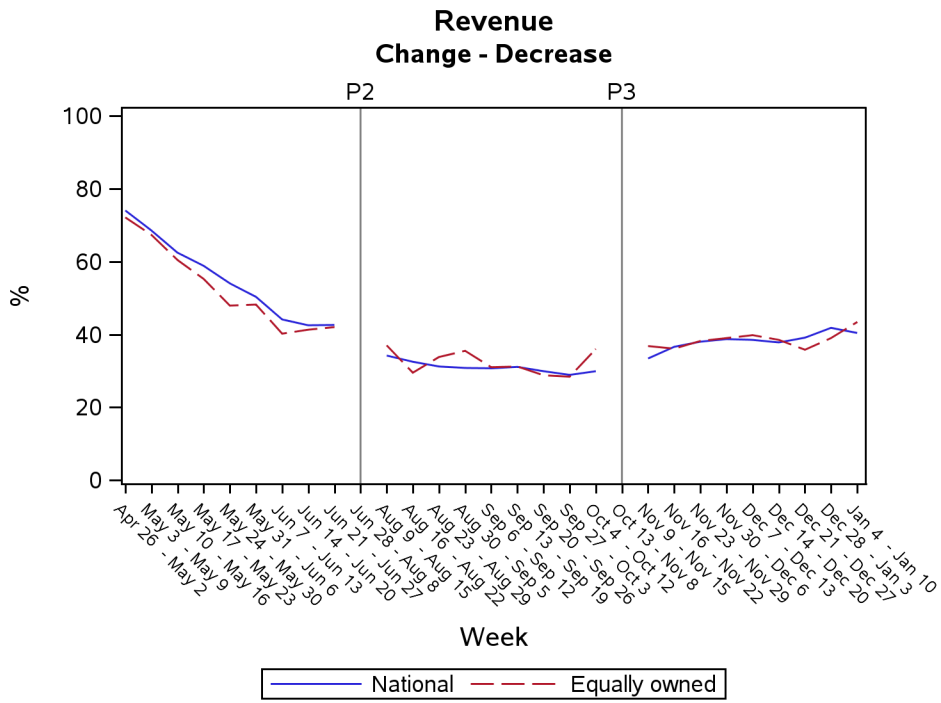

Revenue
No change
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Equally owned

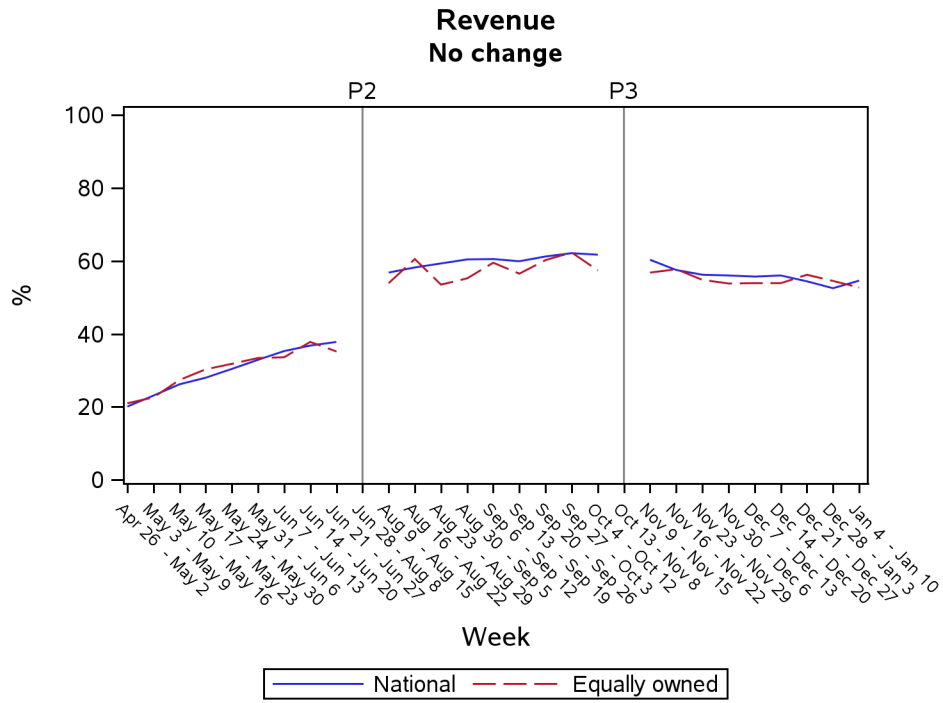

Revenue
Change - Increase
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Equally owned

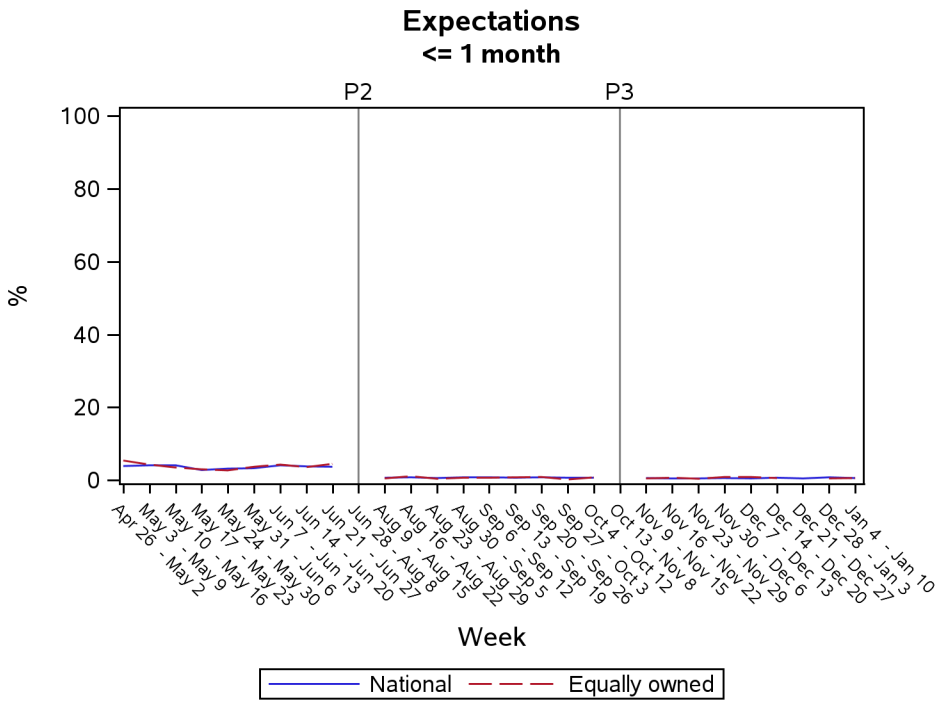

Revenue
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Equally owned

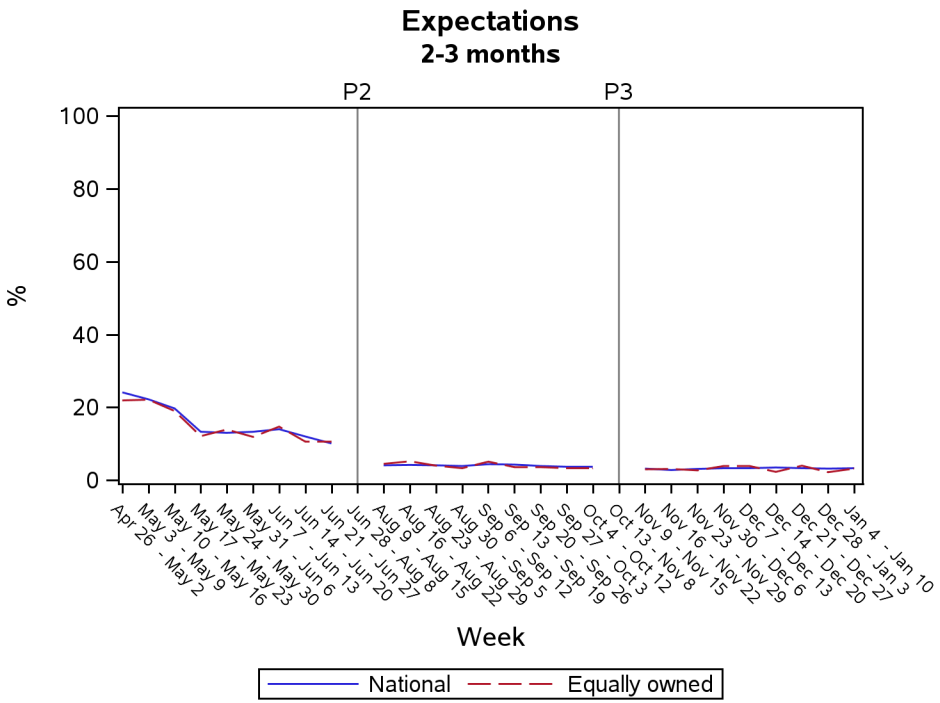

Revenue
No change
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Equally owned

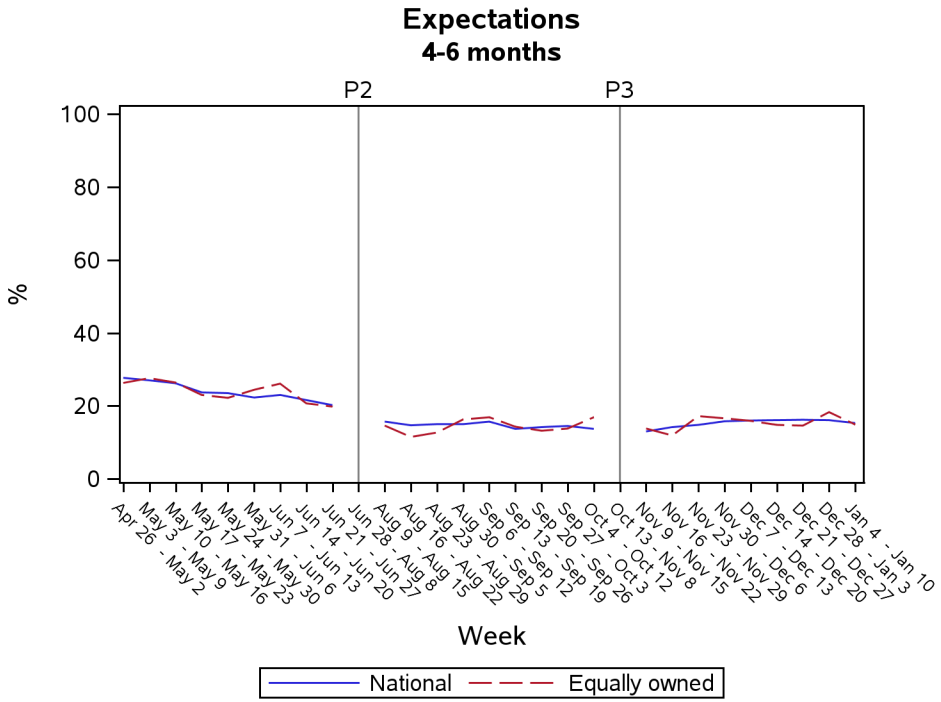

Revenue
Change - Increase
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Equally owned

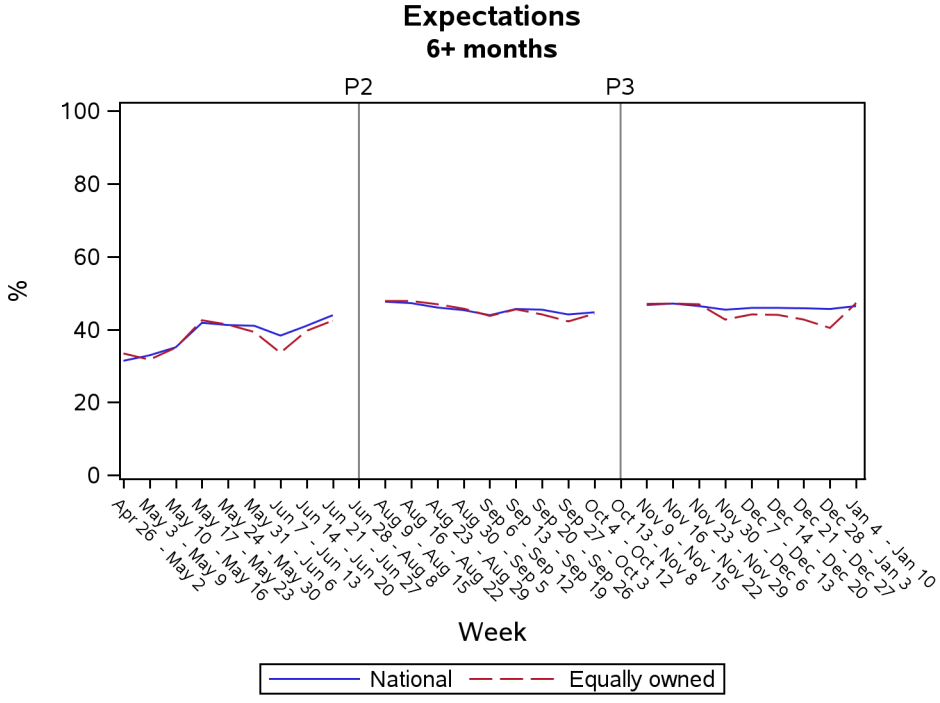

Revenue
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Equally owned

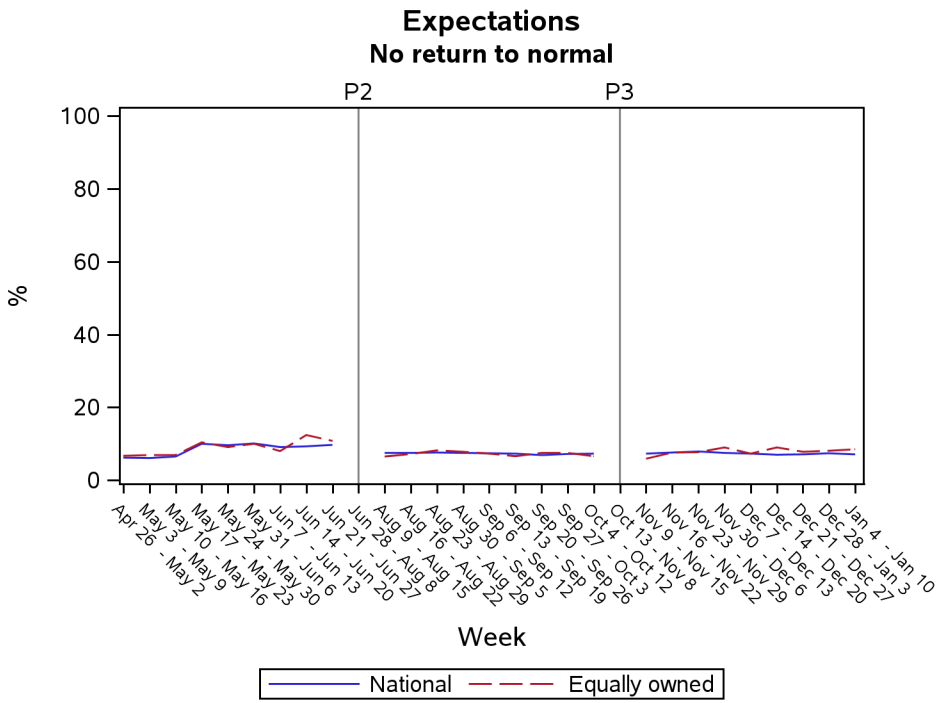

Revenue
No change
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Equally owned

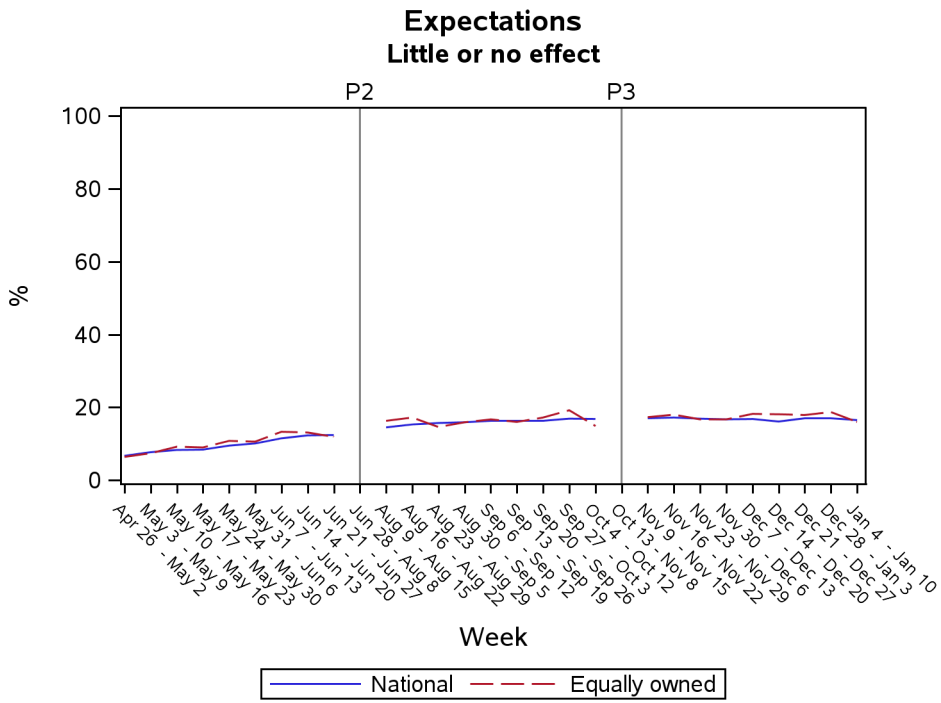

Expectations
<= 1 month
P2
P3
100
80
60
40
20
0
%
Week
National
Equally owned

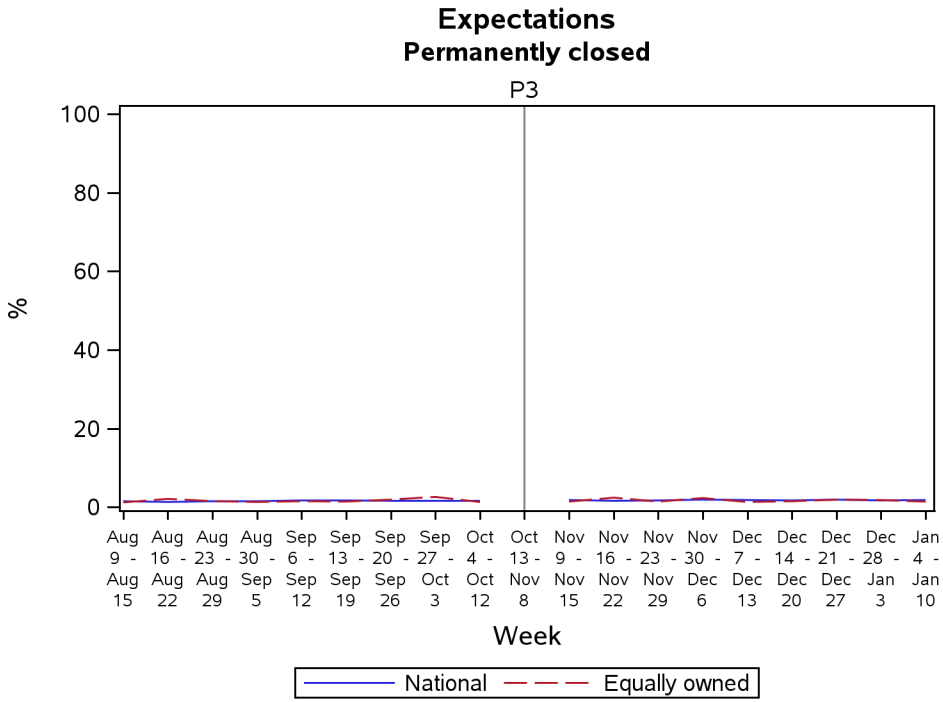

Expectations
2-3 months
P2
P3
100
80
60
40
20
0
%
Week
National
Equally owned

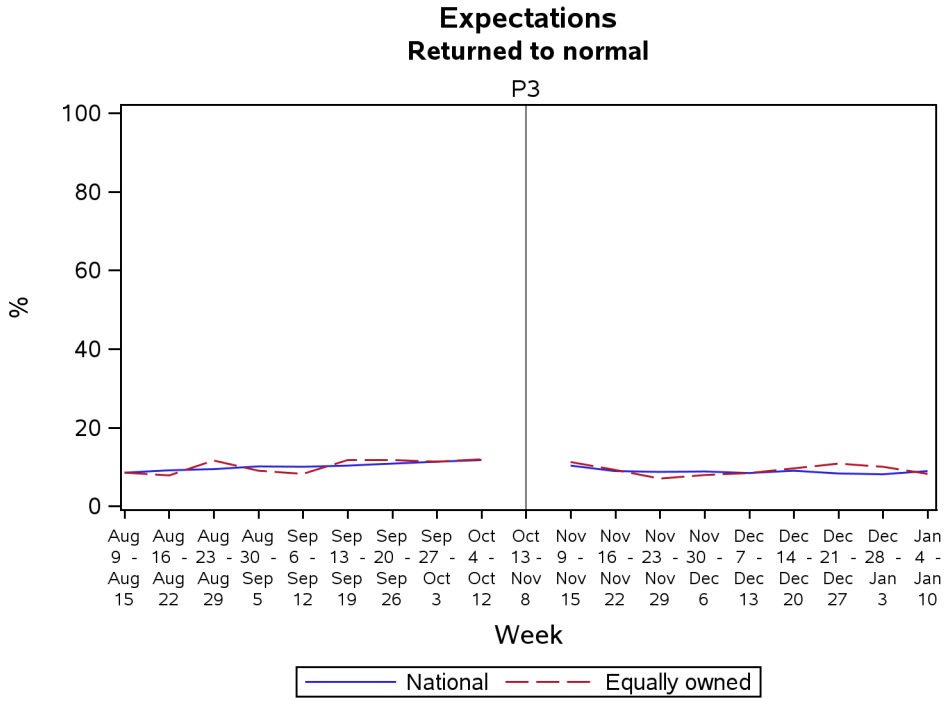

Expectations
4-6 months
P2
P3
100
80
60
40
20
0
%
Week
National
Equally owned


Expectations
6+ months
P2
P3
100
80
60
40
20
0
%
Week
National
Equally owned


Expectations
No return to normal
P2
P3
100
80
60
40
20
0
%
Week
National
Equally owned


Expectations
Little or no effect
P2
P3
100
80
60
40
20
0
%
Week
National
Equally owned


Expectations
Permanently closed
P3
100
80
60
40
20
0
%
Week
National
Equally owned


Expectations
Returned to normal
P3
100
80
60
40
20
0
%
Week
National
Equally owned

Appendix B. Owner Characteristics Published Estimates (Race American Indian or Alaska Native (AIAN))

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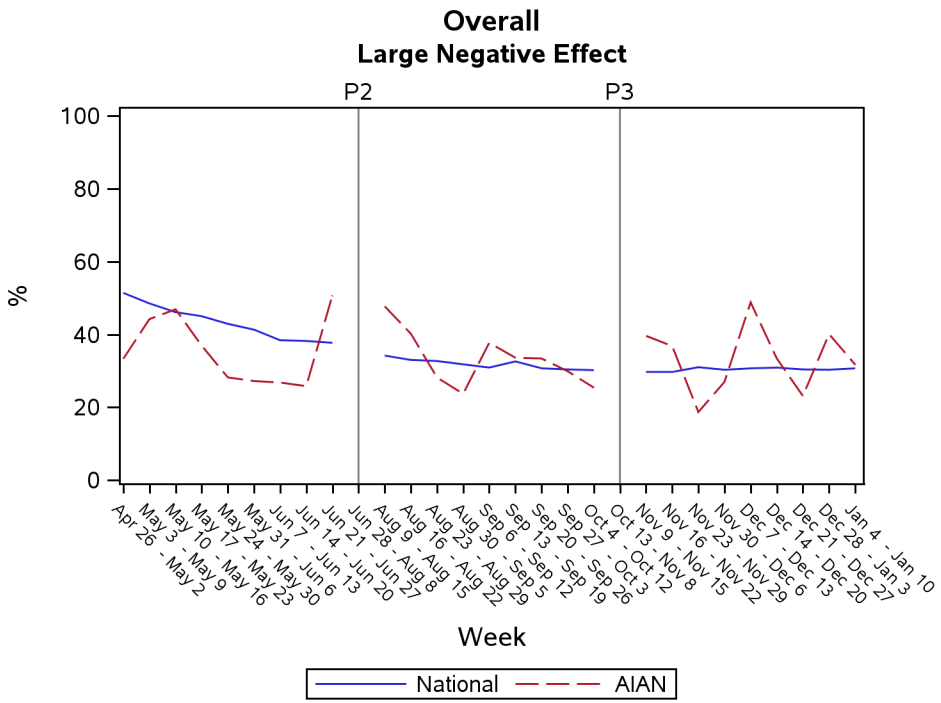
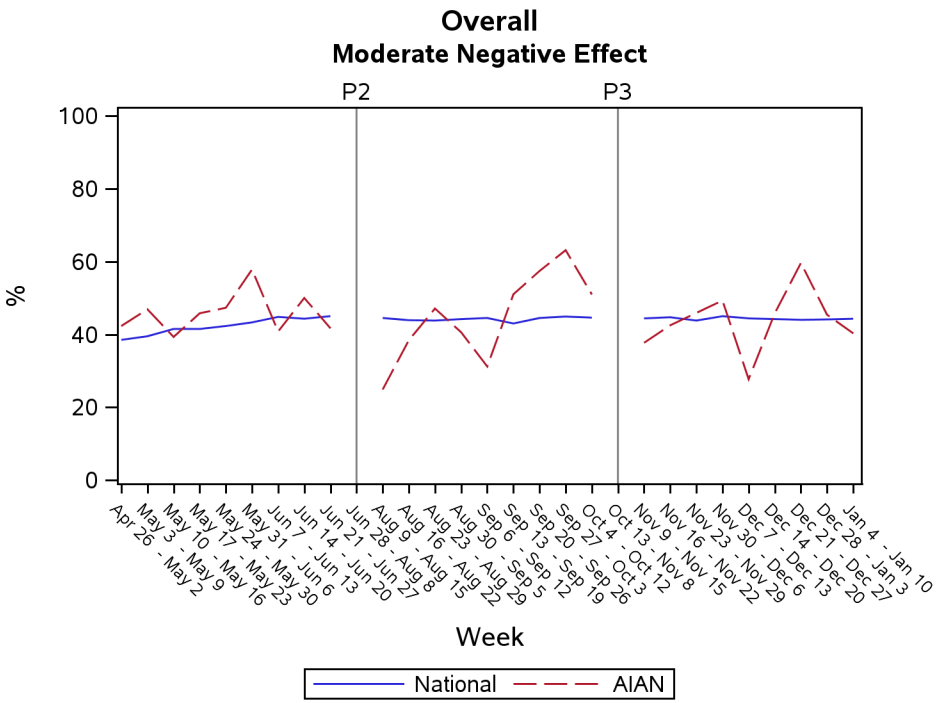
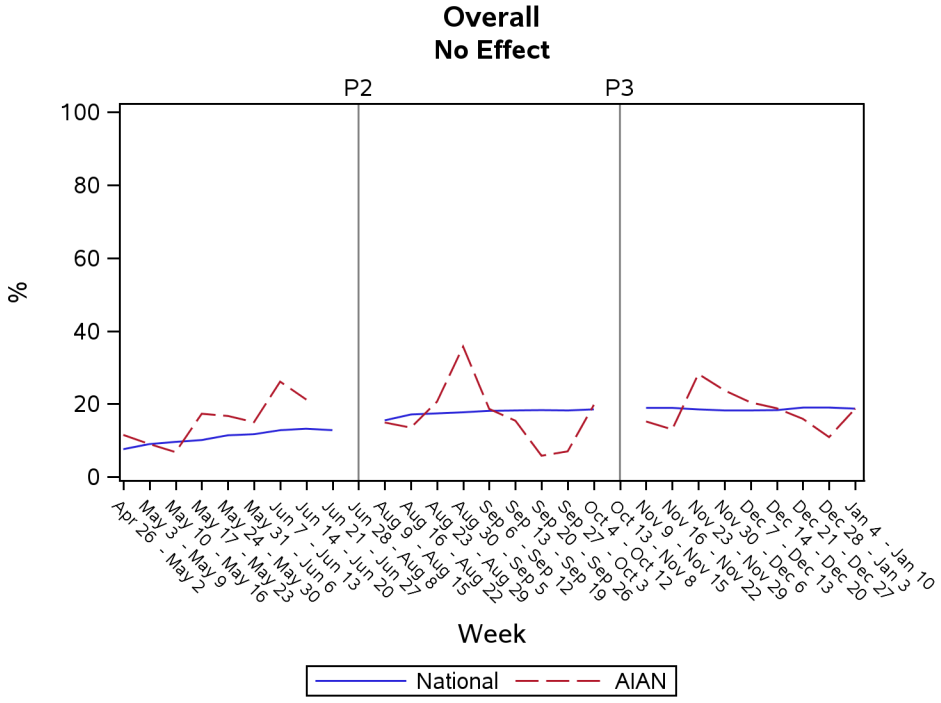
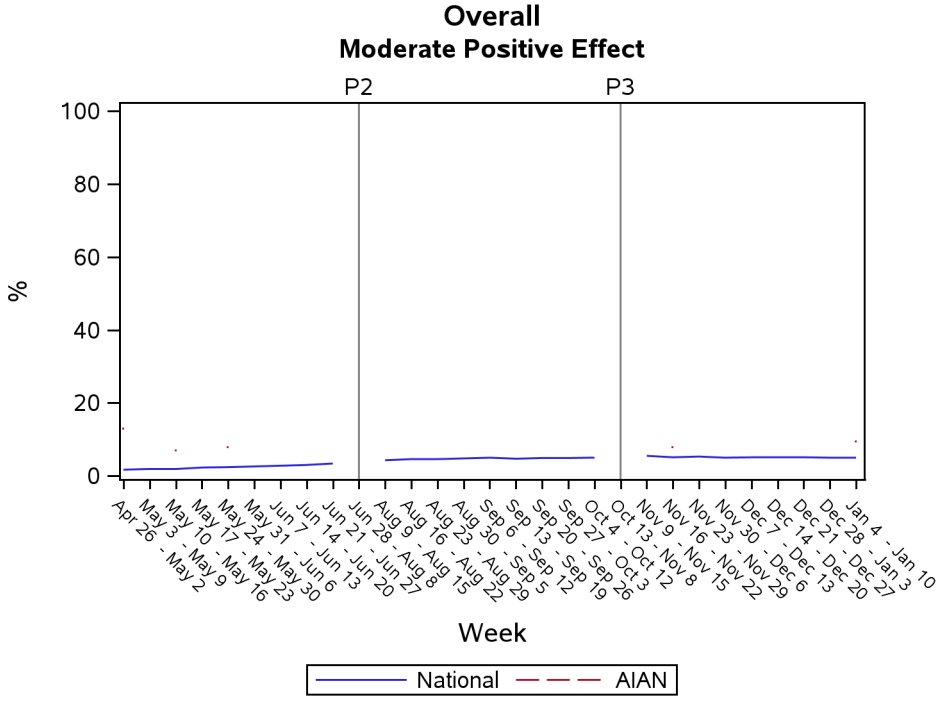
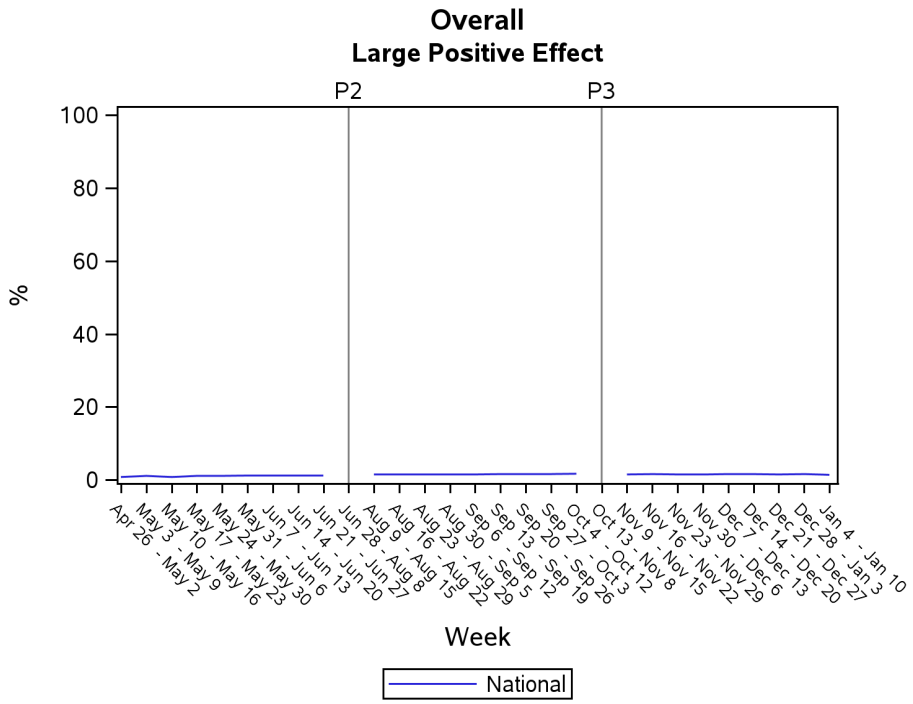
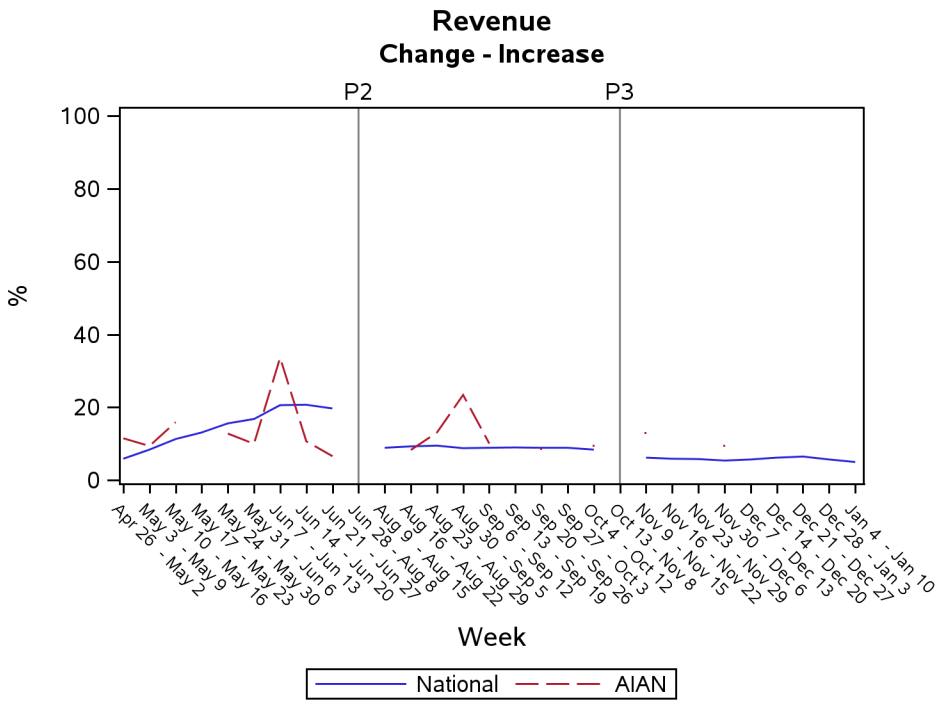

Overall
Large Negative Effect
P2
P3
100
80
60
40
20
0
%
Week
National
AIAN

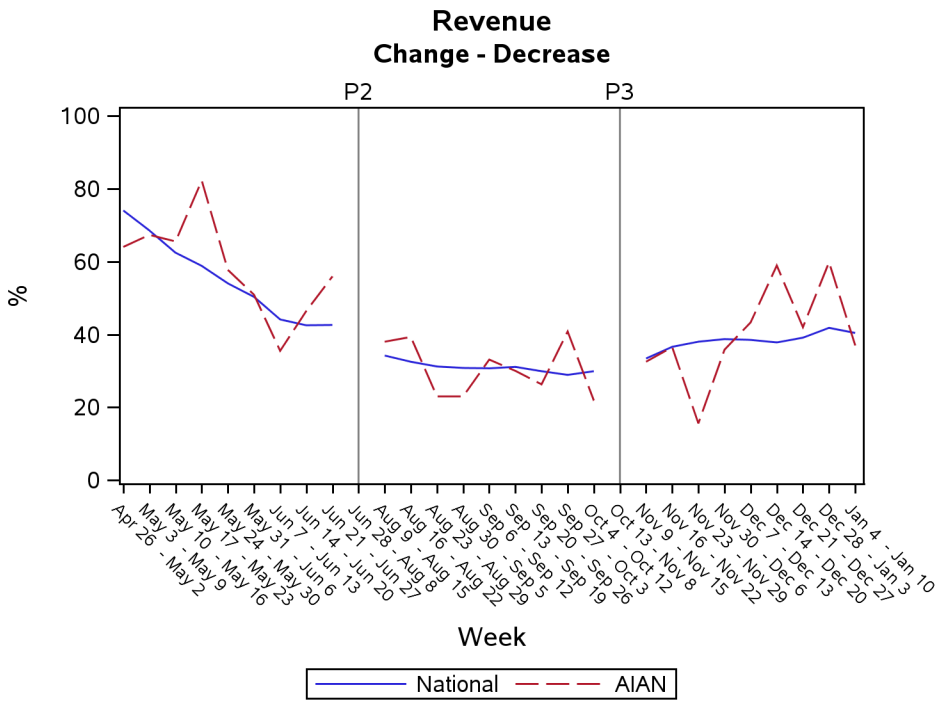

Overall
Moderate Negative Effect
P2
P3
100
80
60
40
20
0
%
Week
National
AIAN

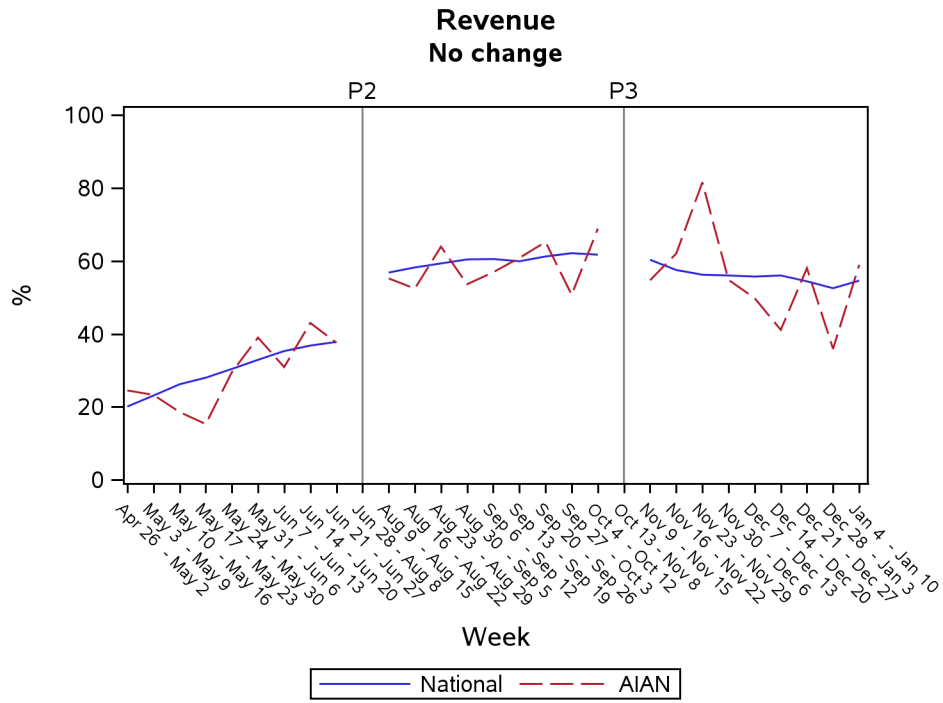

Overall
No Effect
P2
P3
100
80
60
40
20
0
%
Week
National
AIAN

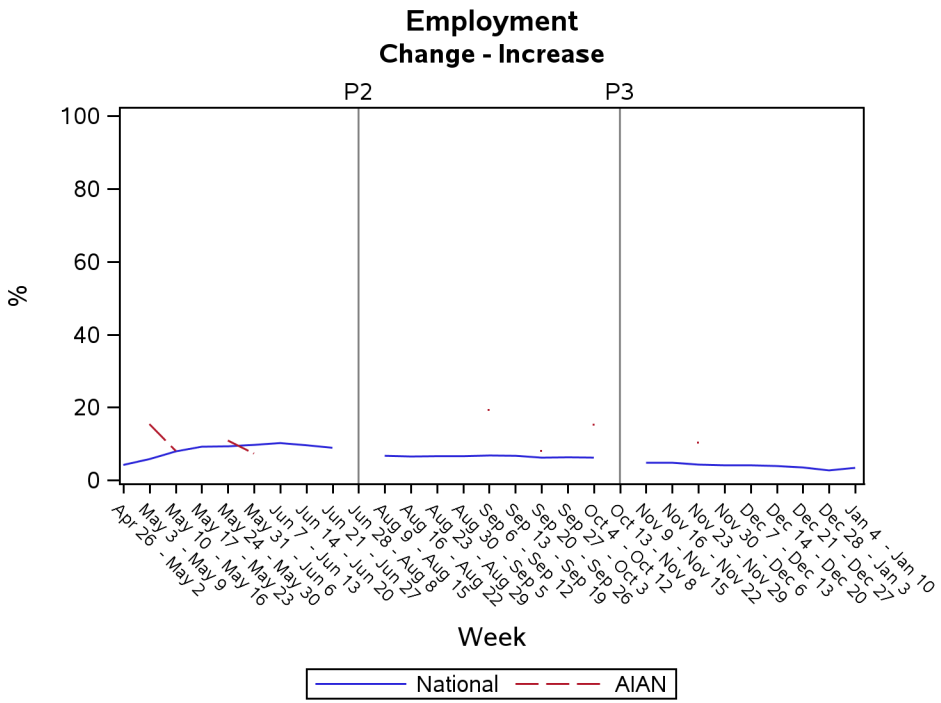

Overall
Moderate Positive Effect
P2
P3
100
80
60
40
20
0
%
Week
National
AIAN

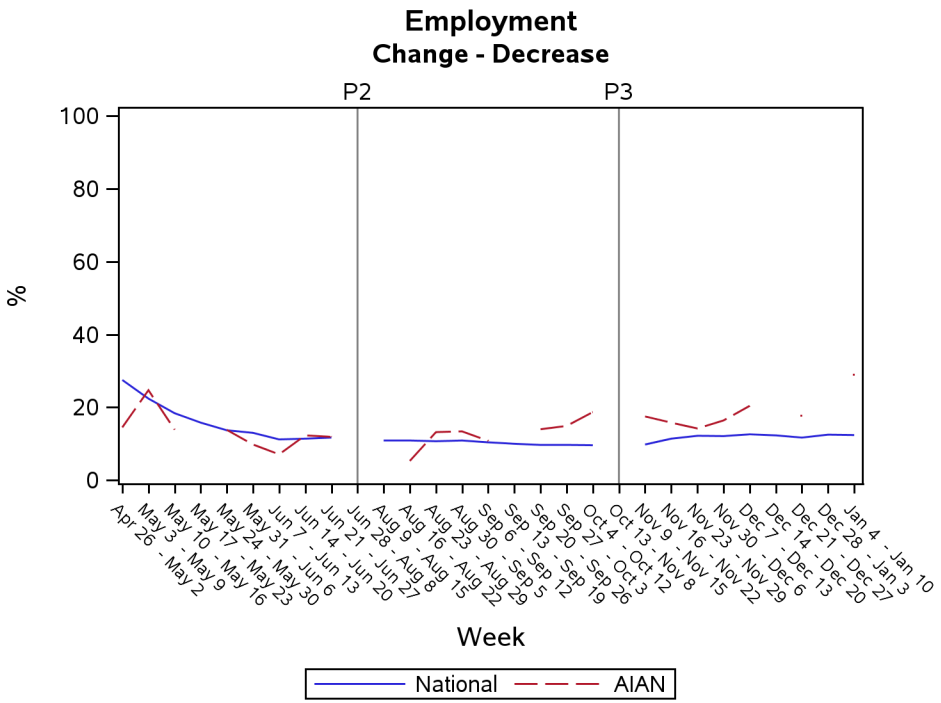

Overall
Large Positive Effect
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National

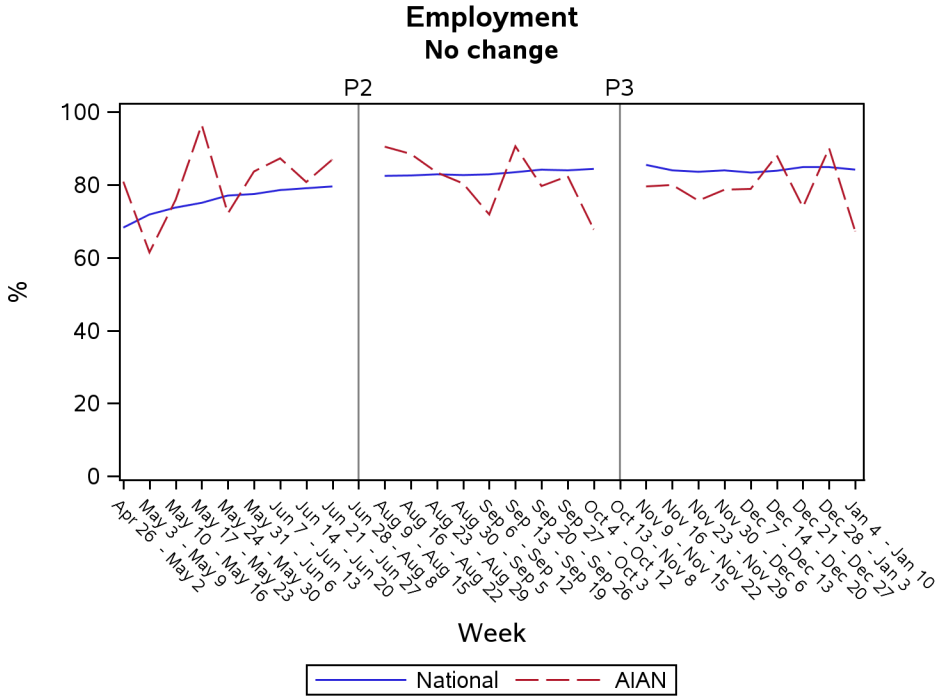

Revenue
Change - Increase
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
AIAN

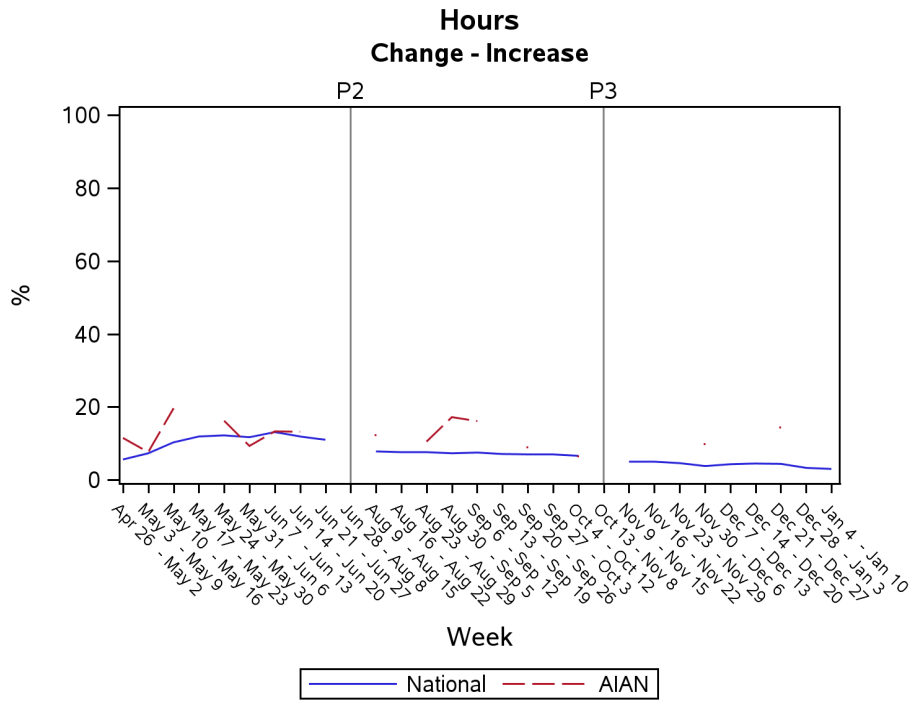

Revenue
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
AIAN

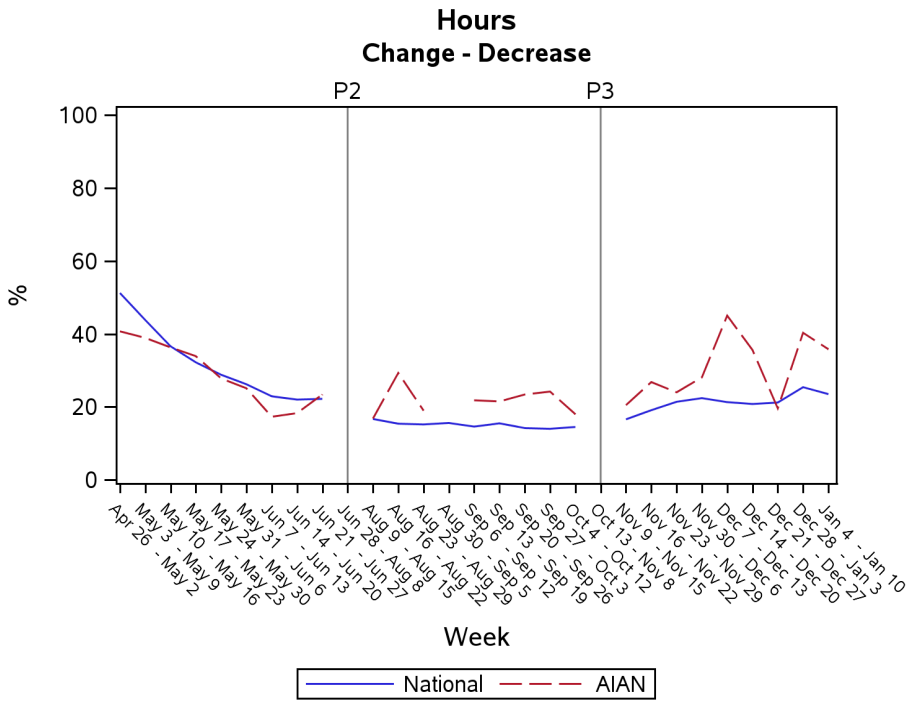

Revenue
No change
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
AIAN

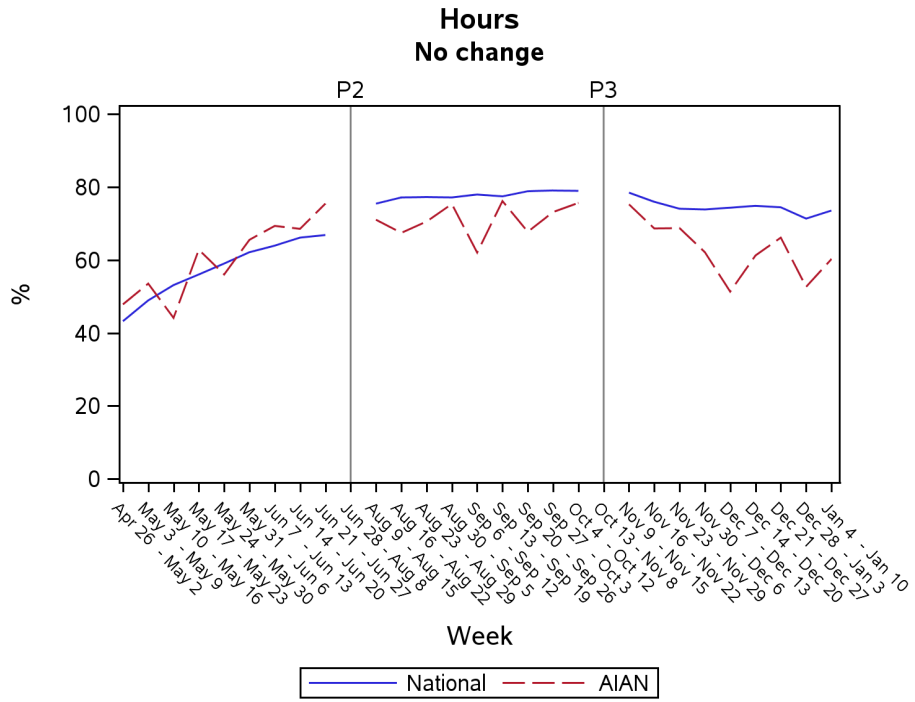

Employment
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
AIAN

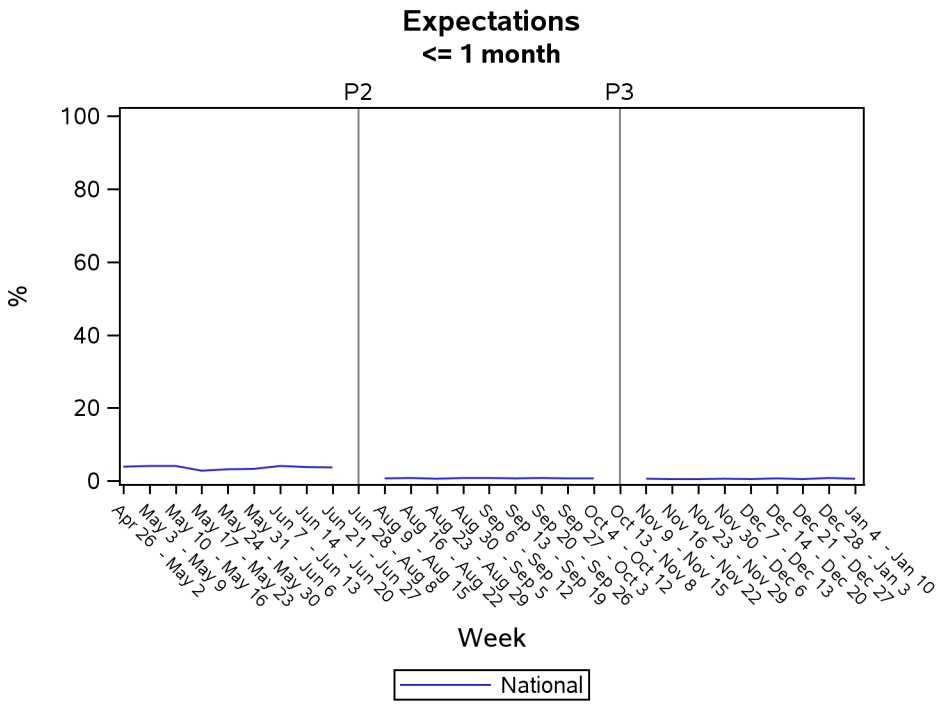

Employment
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
AIAN

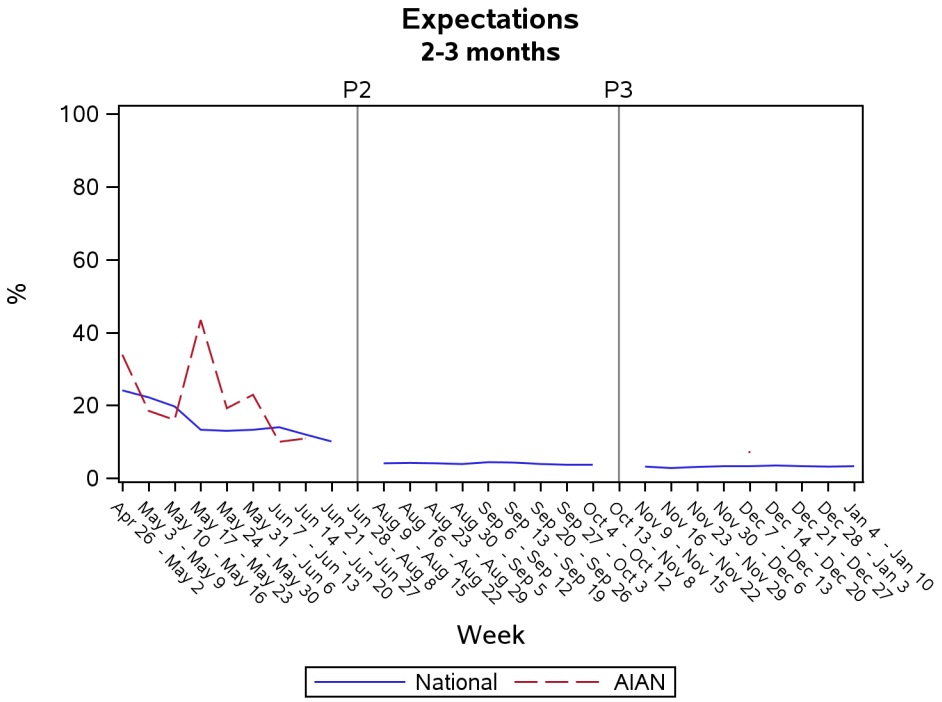

Employment
No change
P2
P3
100
80
60
40
20
0
%
Week
National
AIAN

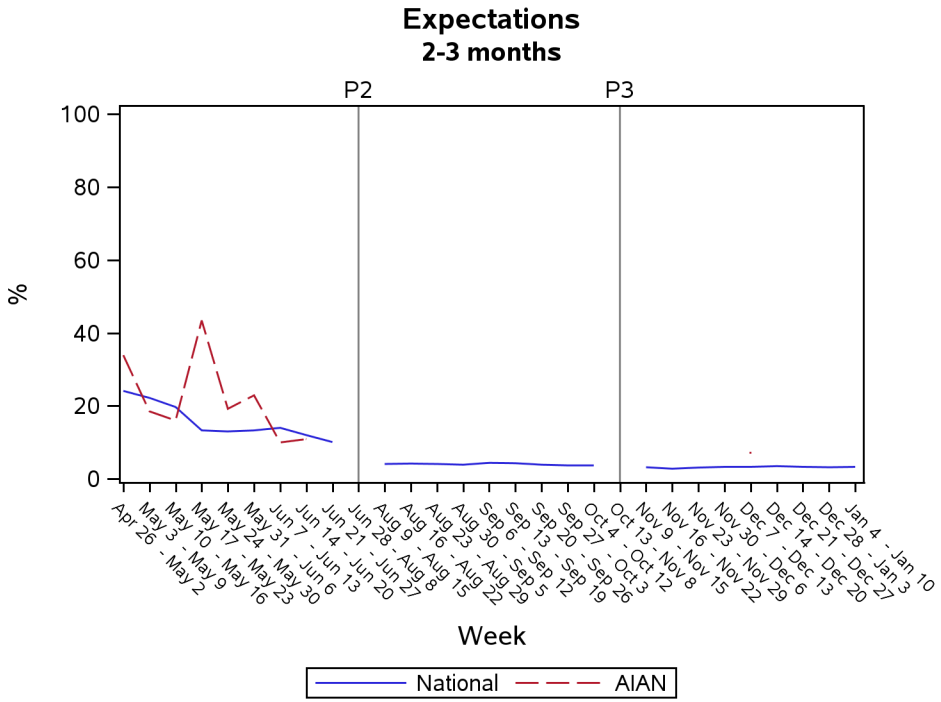

Hours
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
AIAN

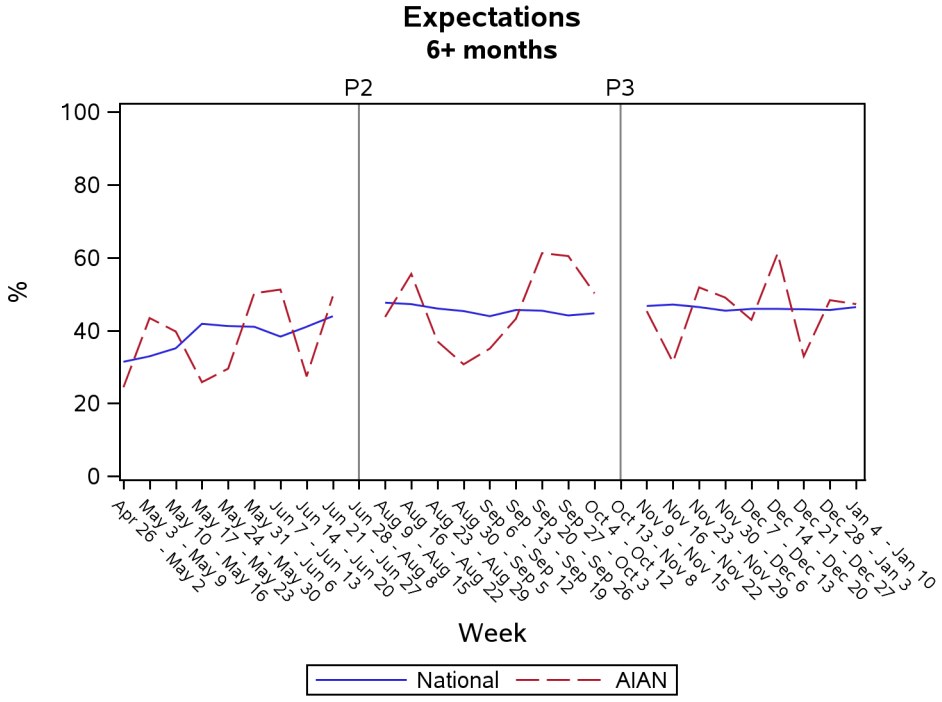

Hours
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
AIAN

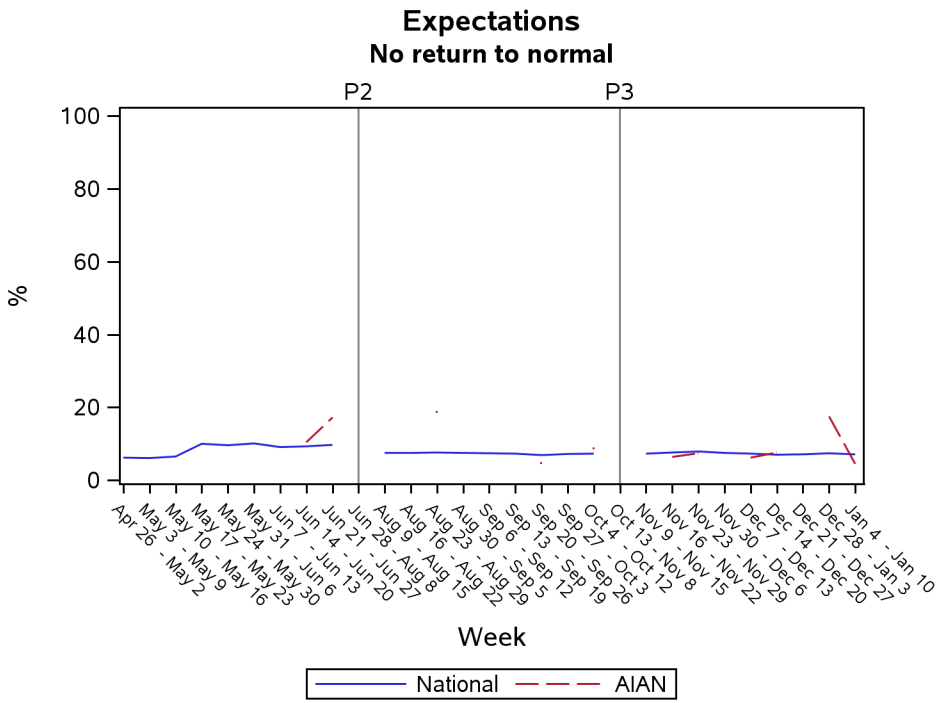

Hours
No change
P2
P3
100
80
60
40
20
0
%
Week
National
AIAN

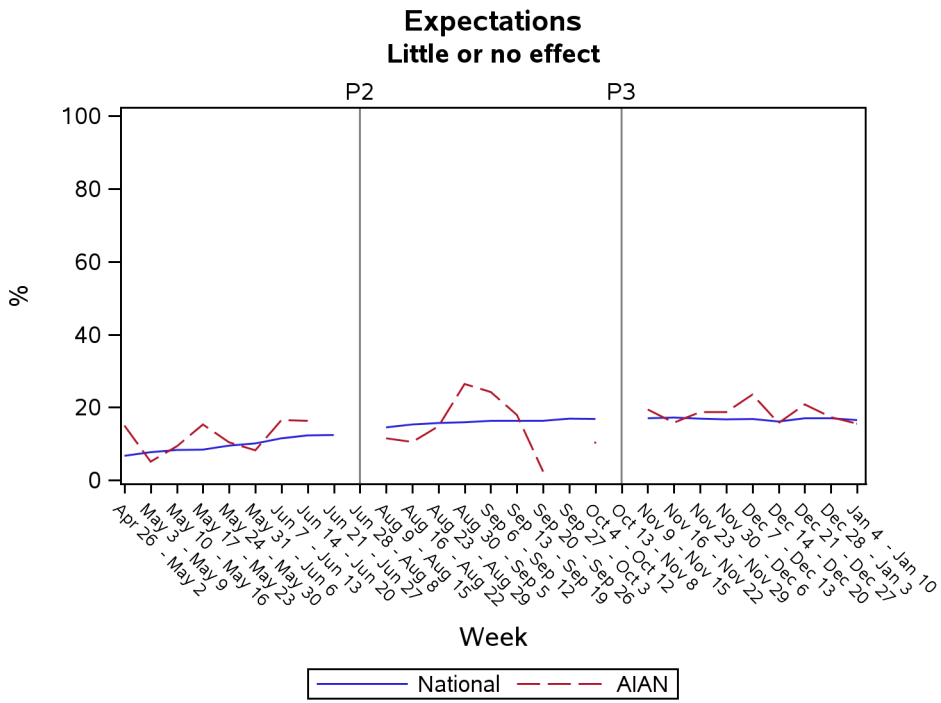

Expectations
<= 1 month
P2
P3
100
80
60
40
20
0
%
Week
National

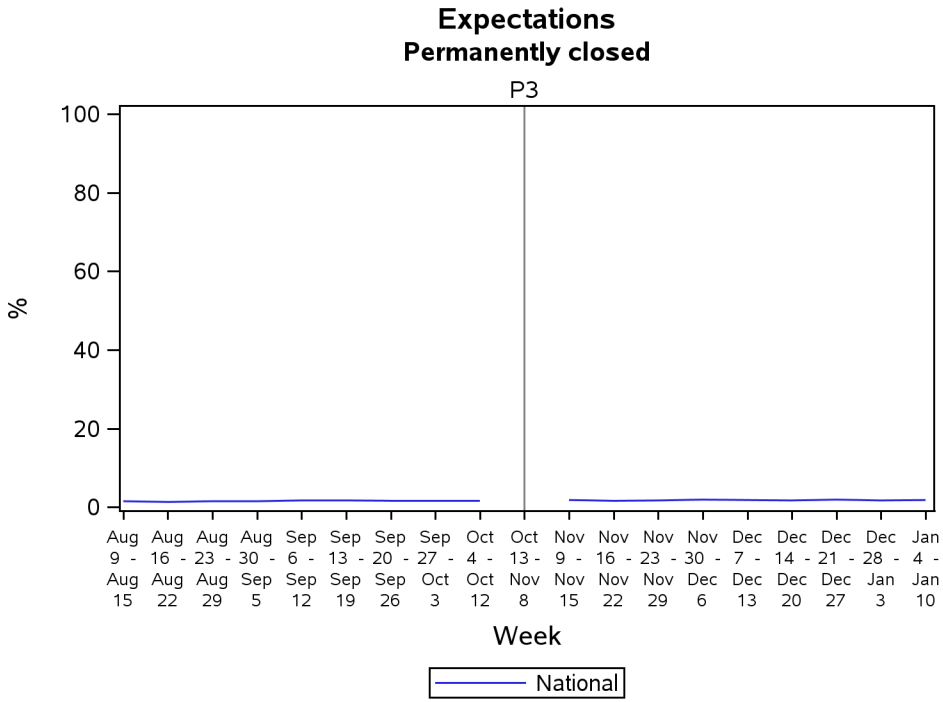

Expectations
2-3 months
P2
P3
100
80
60
40
20
0
%
Week
National
AIAN

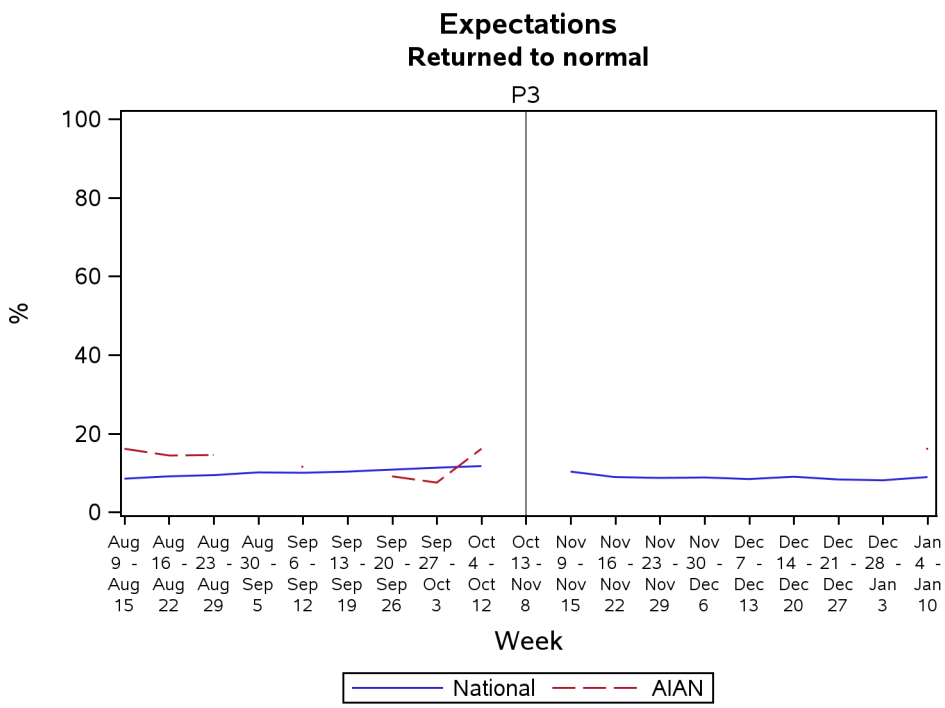

Expectations
2-3 months
P2
P3
100
80
60
40
20
0
%
Week
National
AIAN


Expectations
6+ months
P2
P3
100
80
60
40
20
0
%
Week
National
AIAN


Expectations
No return to normal
P2
P3
100
80
60
40
20
0
%
Week
National
AIAN


Expectations
Little or no effect
P2
P3
100
80
60
40
20
0
%
Week
National
AIAN


Expectations
Permanently closed
P3
100
80
60
40
20
0
%
Week
National


Expectations
Returned to normal
P3
100
80
60
40
20
0
%
Week
National
AIAN

Appendix B. Owner Characteristics Published Estimates (Race Asian)

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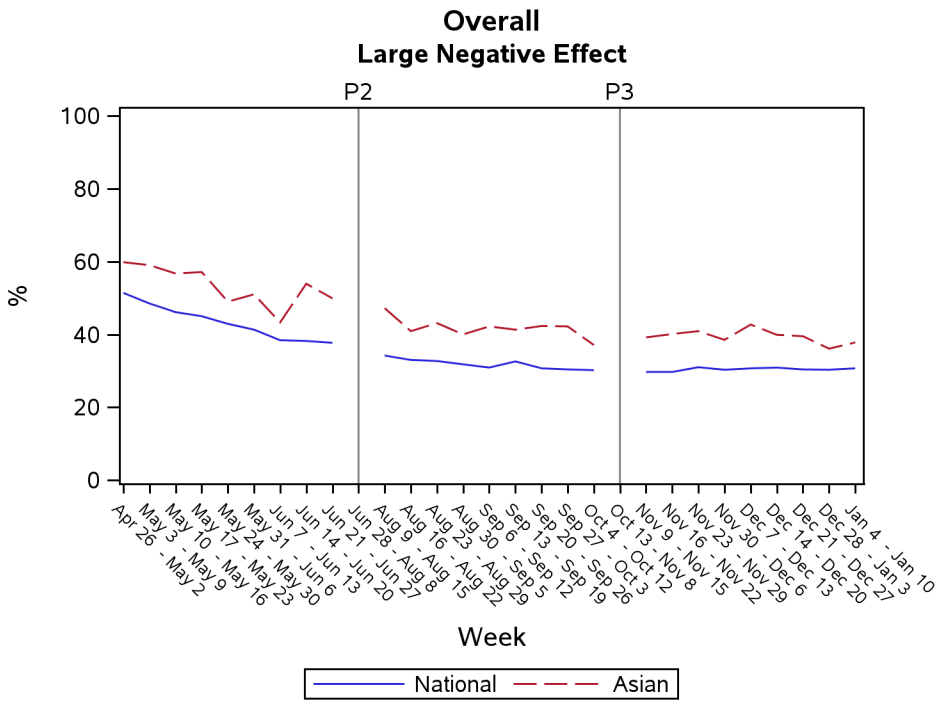
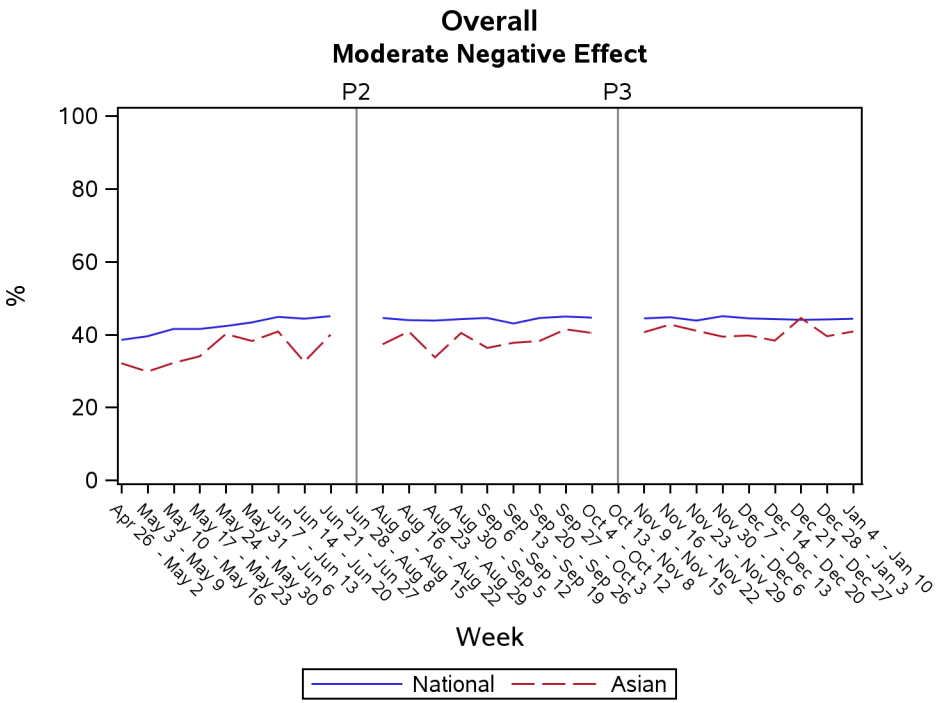
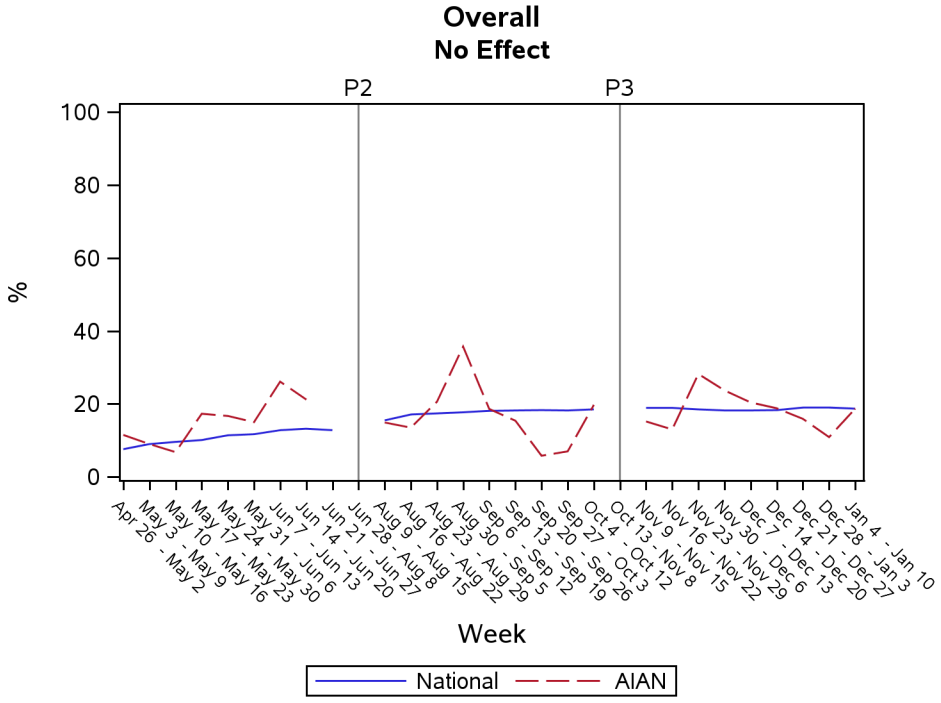
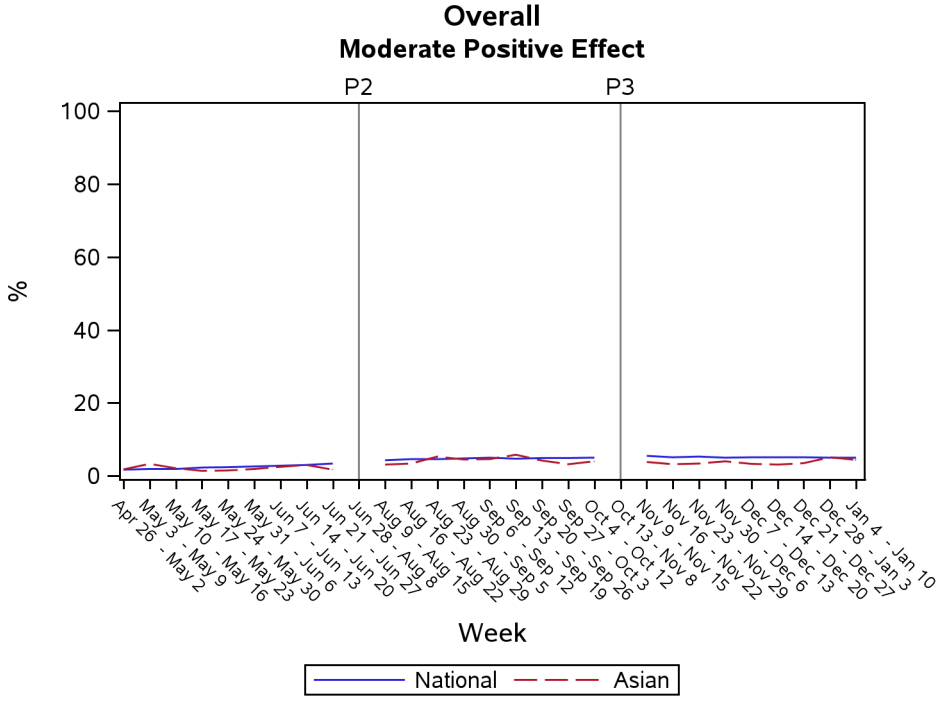
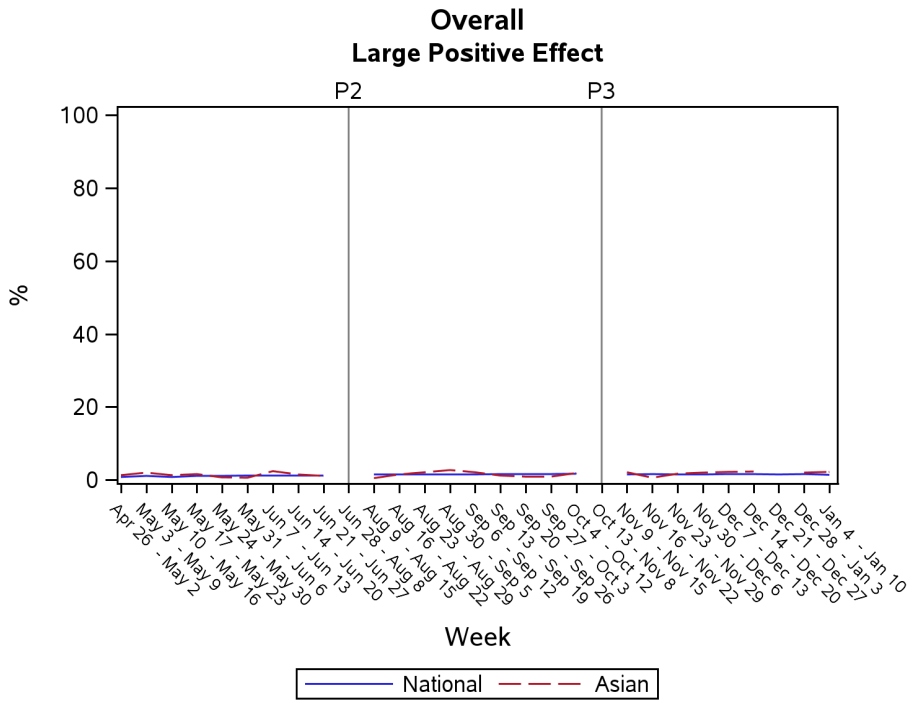
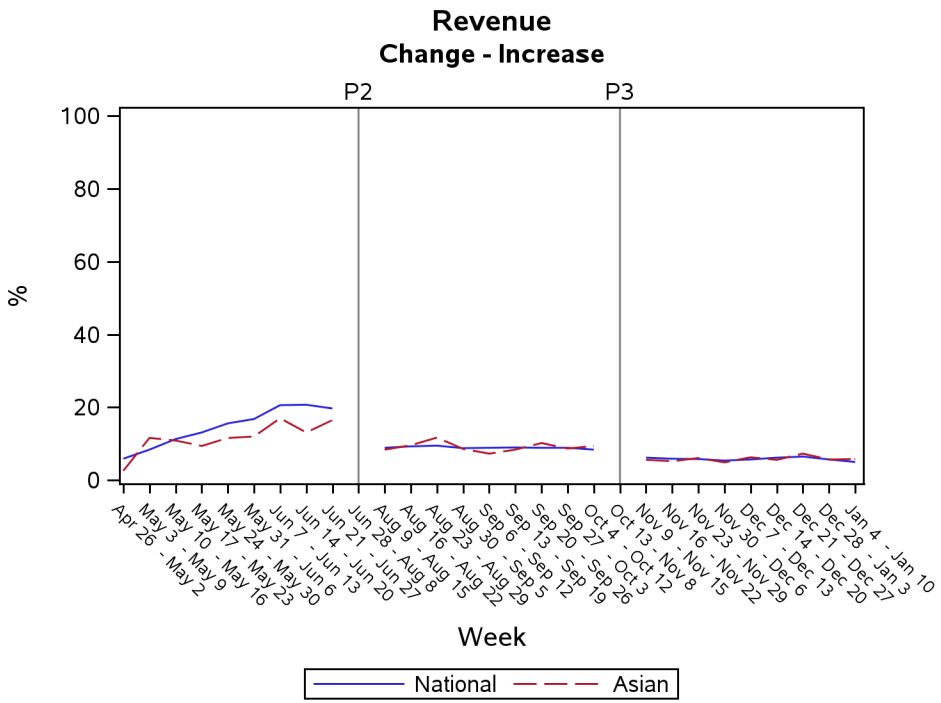

Overall
Large Negative Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Asian

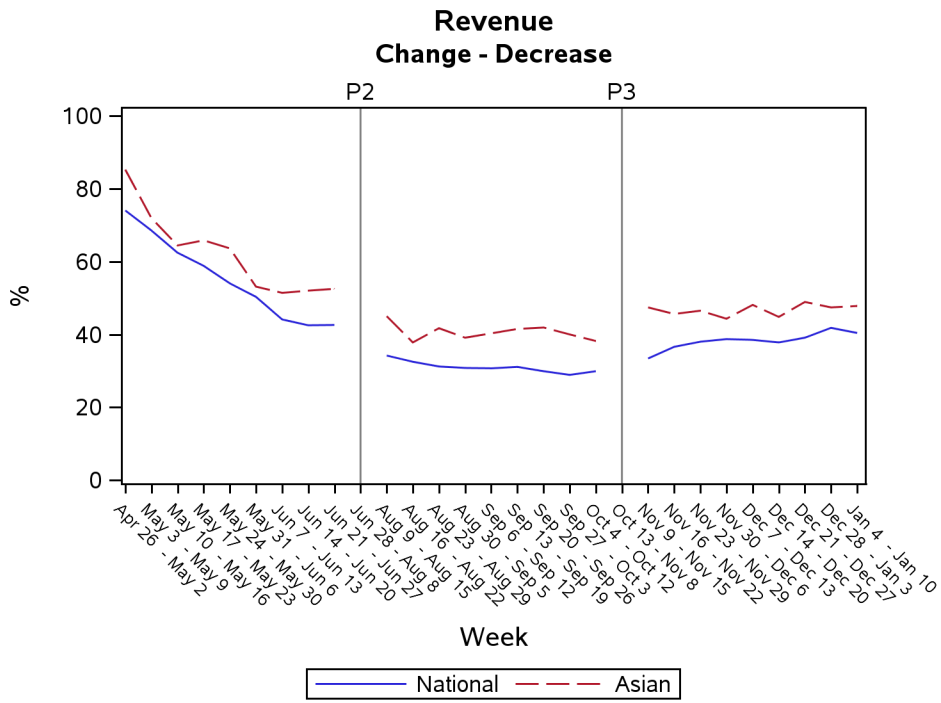

Overall
Moderate Negative Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Asian

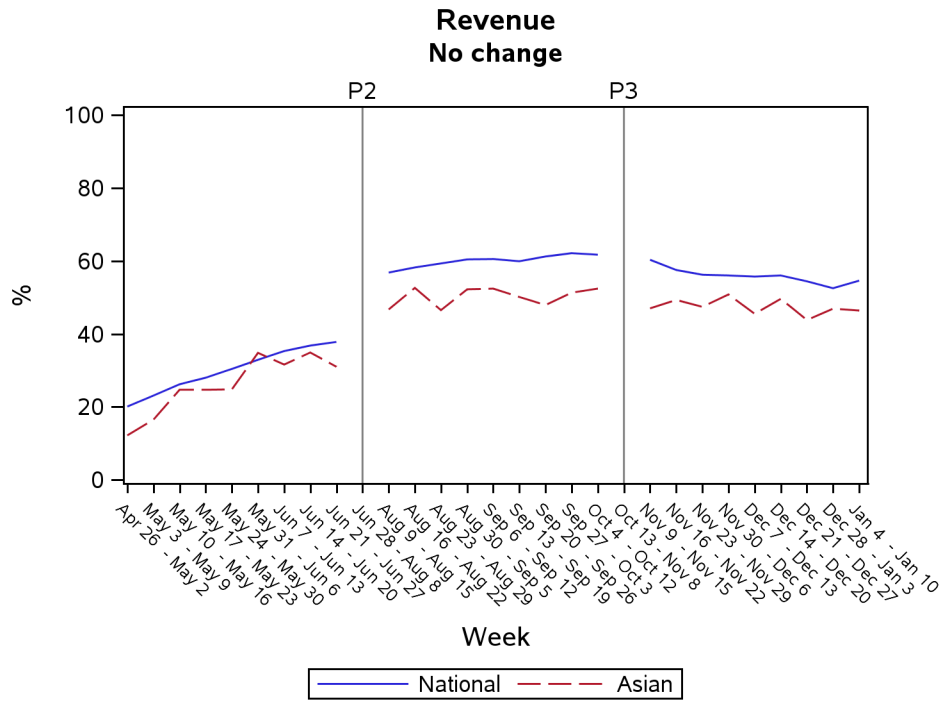

Overall
No Effect
P2
P3
100
80
60
40
20
0
%
Week
National
AIAN

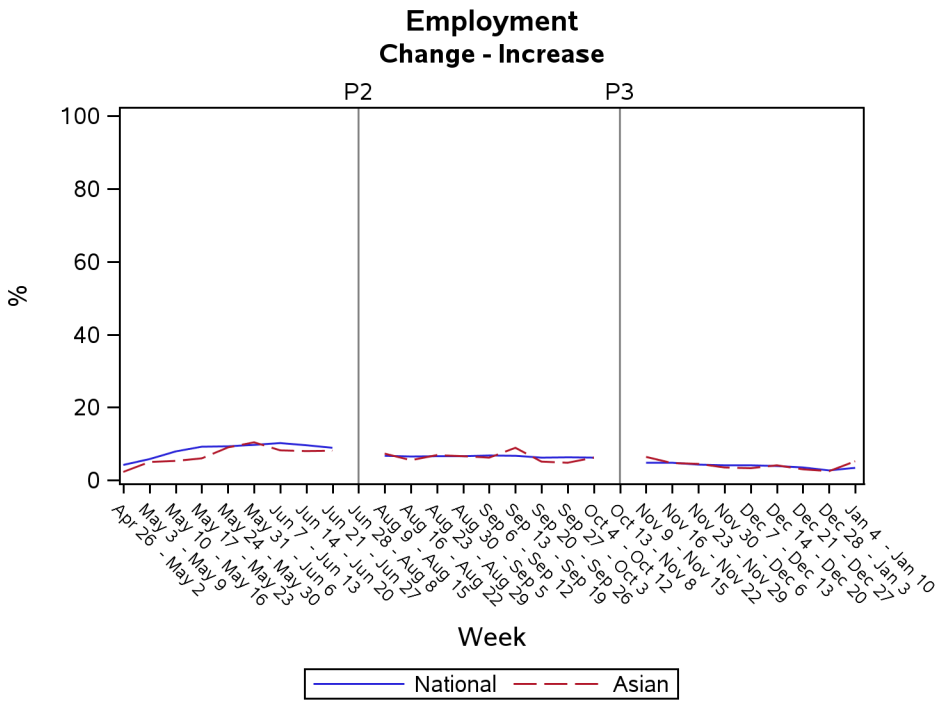

Overall
Moderate Positive Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Asian

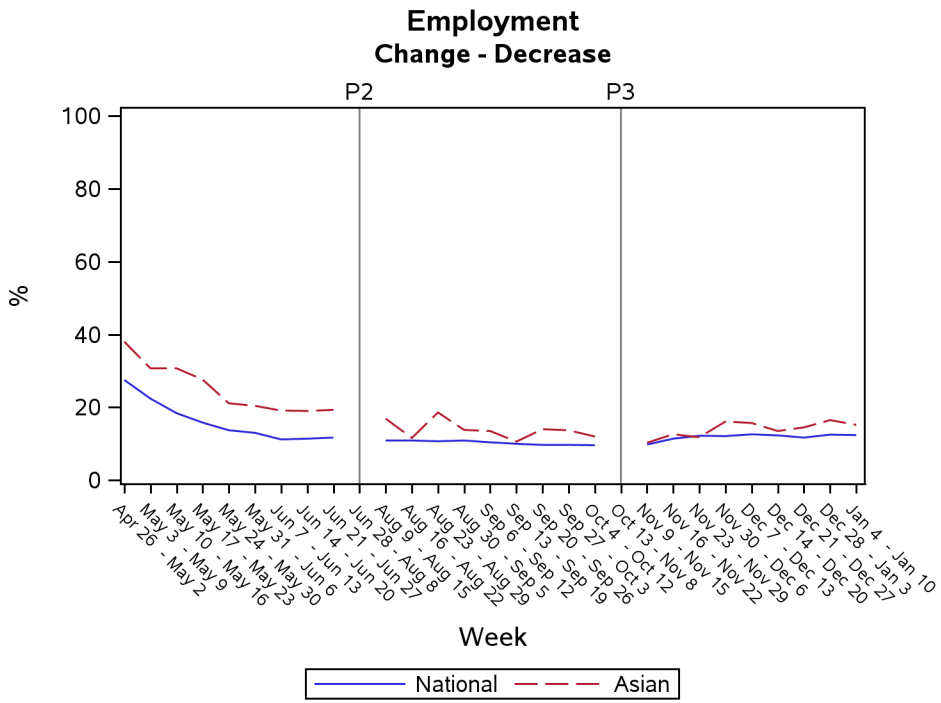

Overall
Large Positive Effect
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Asian

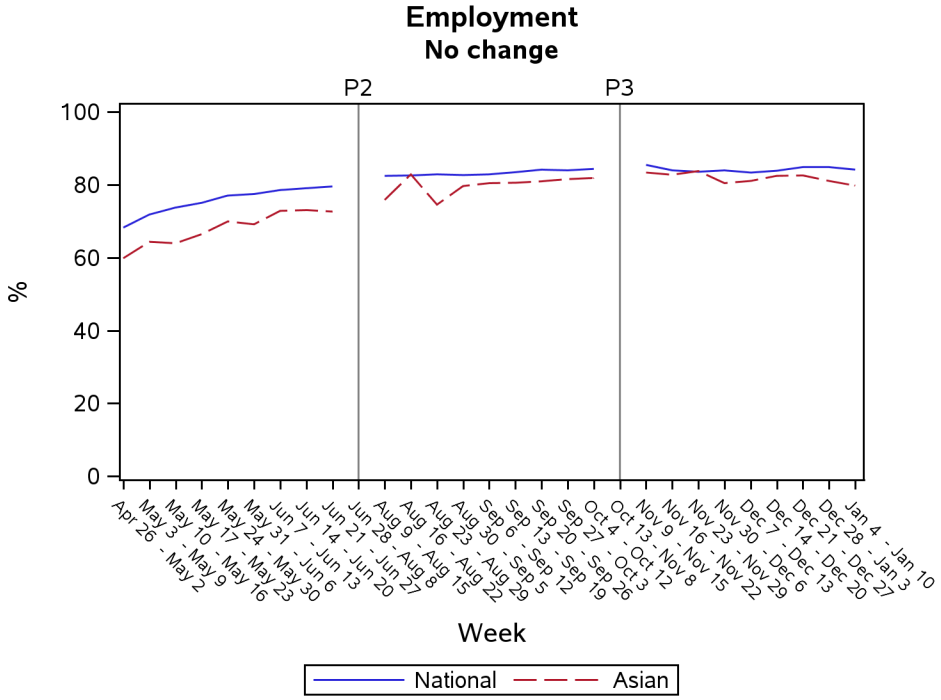

Revenue
Change - Increase
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Asian

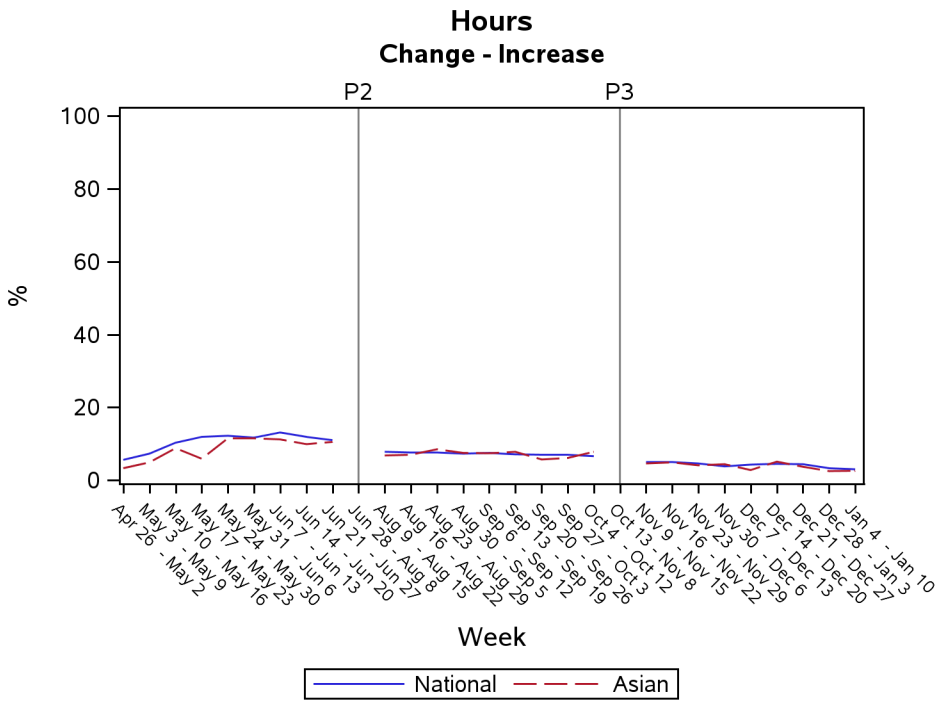

Revenue
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Asian

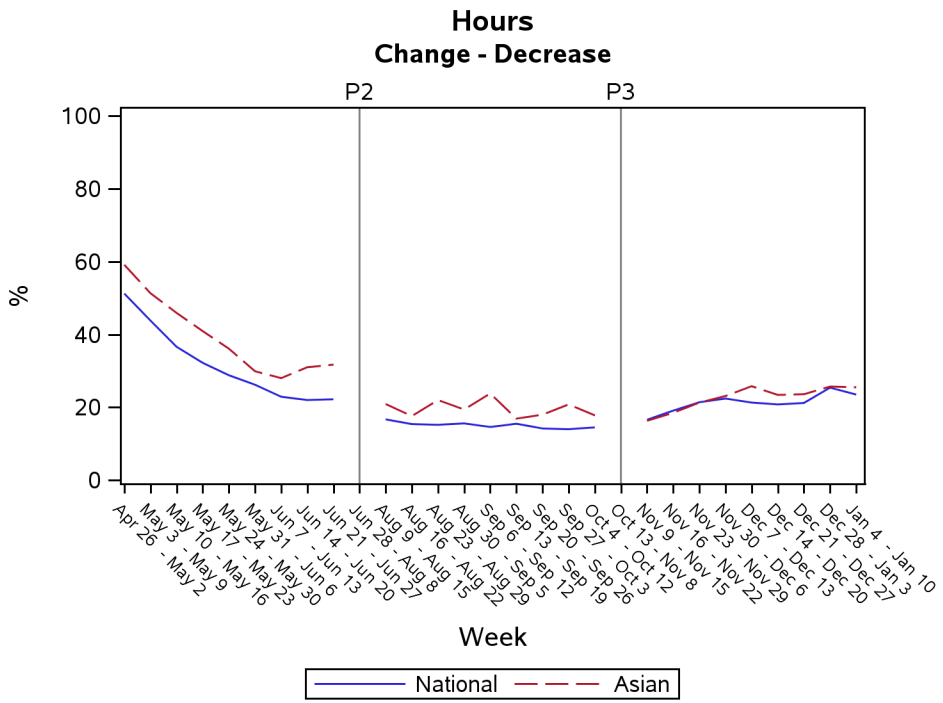

Revenue
No change
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Asian

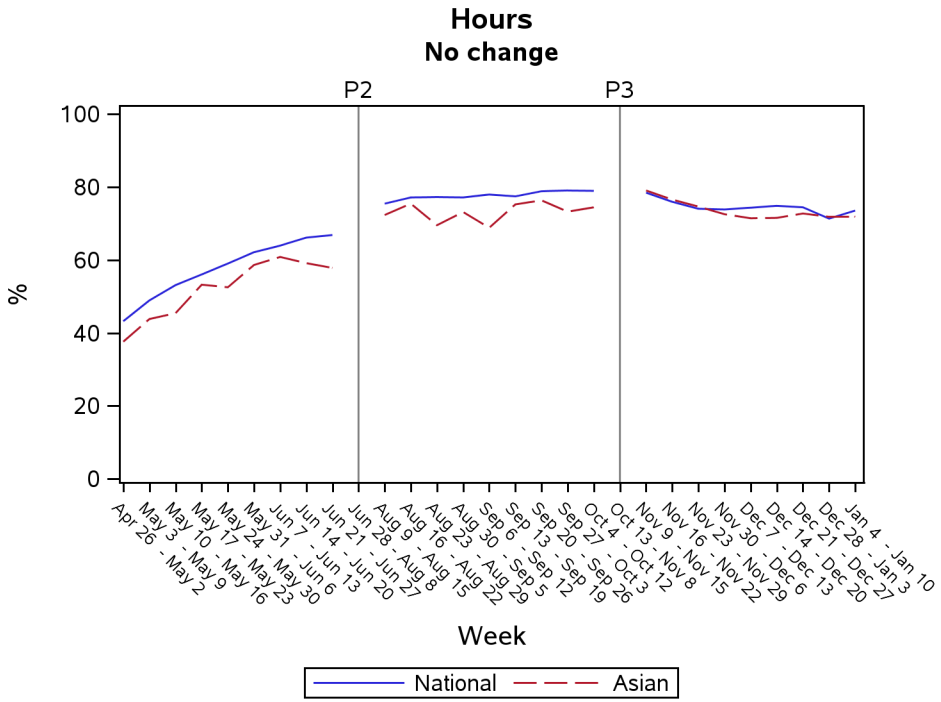

Employment
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
Asian

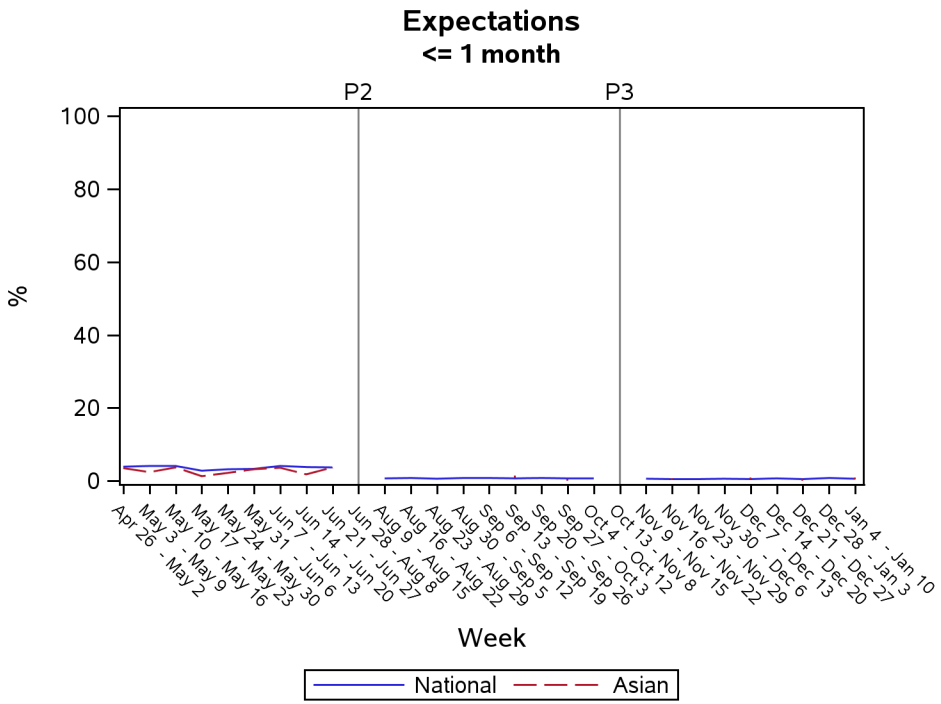

Employment
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
Asian

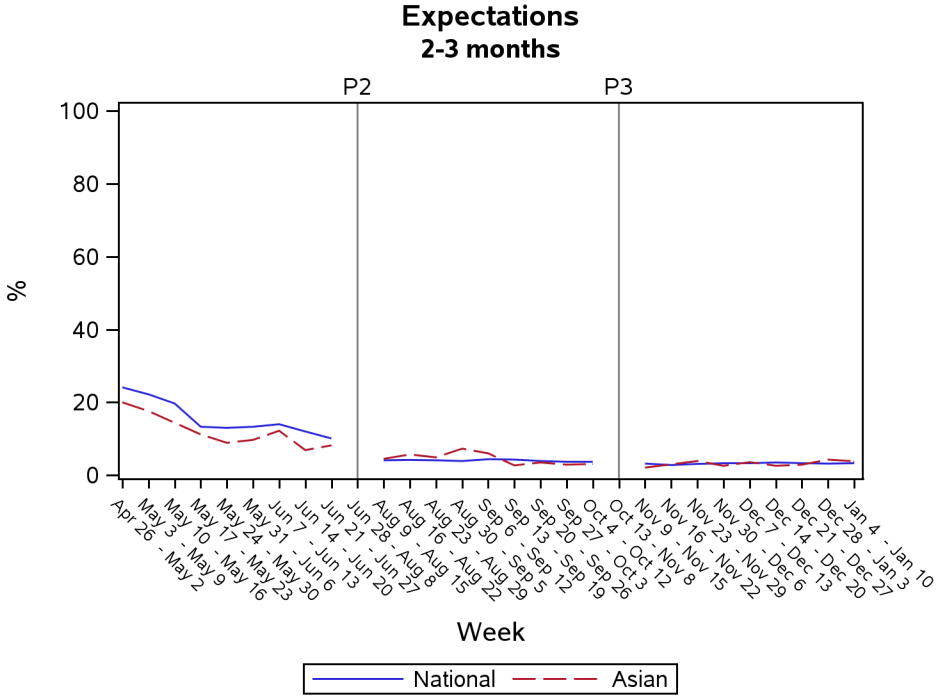

Employment
No change
P2
P3
100
80
60
40
20
0
%
Week
National
Asian

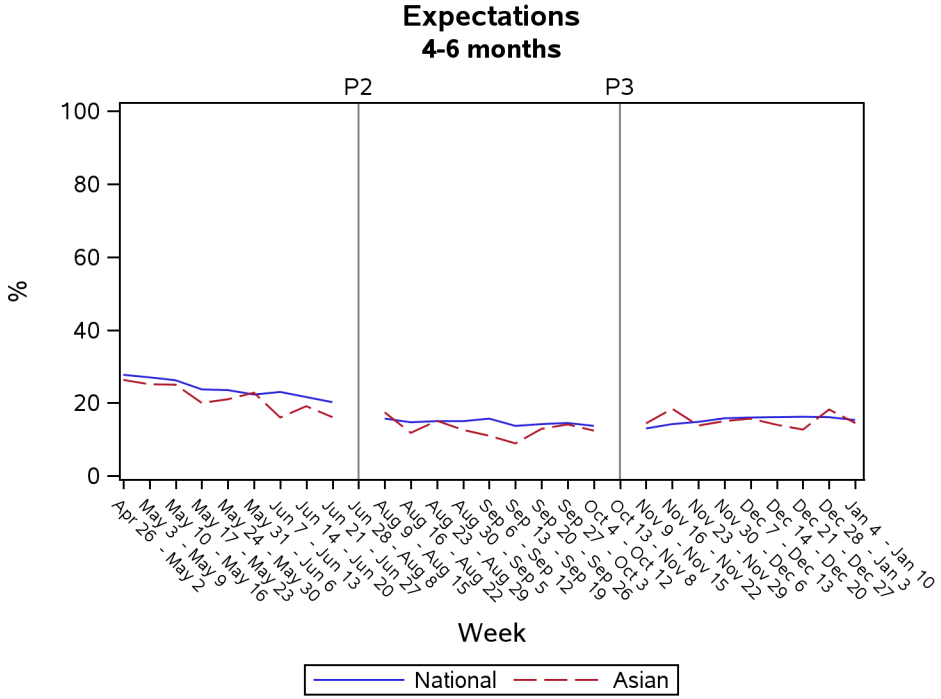

Hours
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
Asian

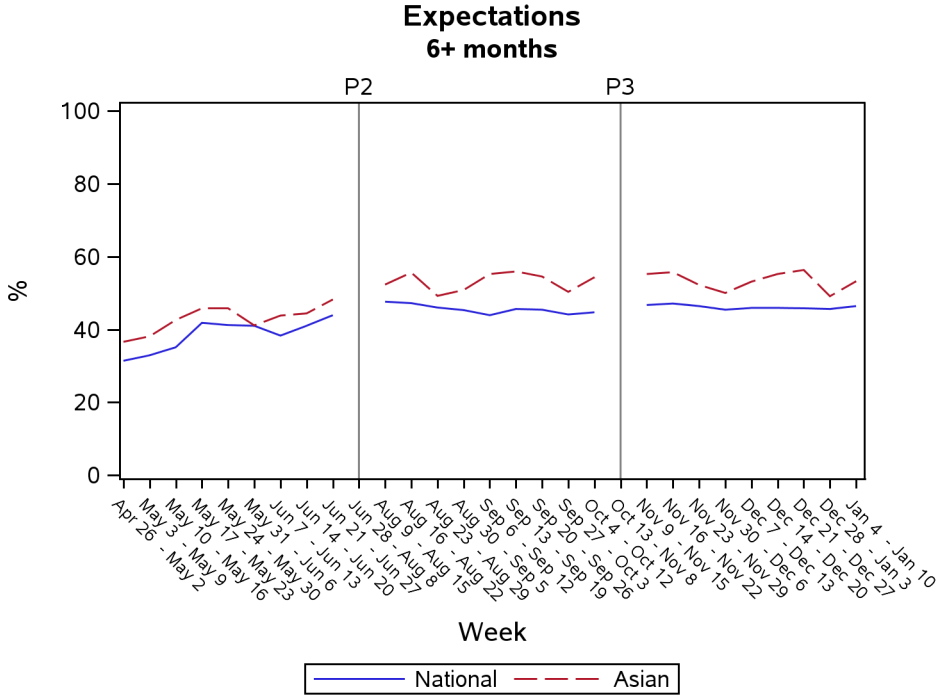

Hours
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
Asian

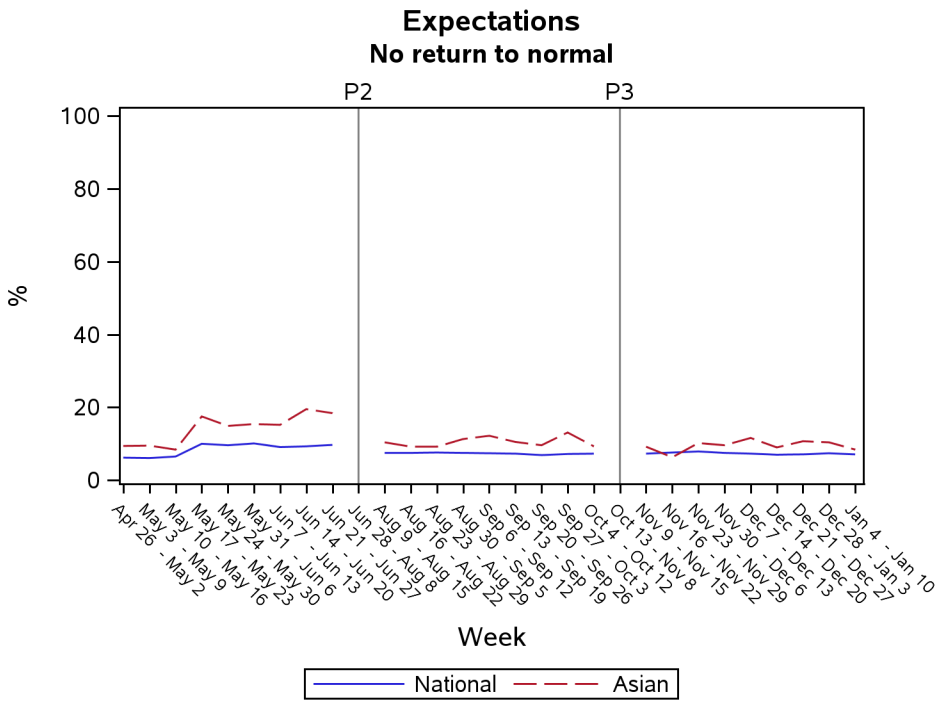

Hours
No change
P2
P3
100
80
60
40
20
0
%
Week
National
Asian

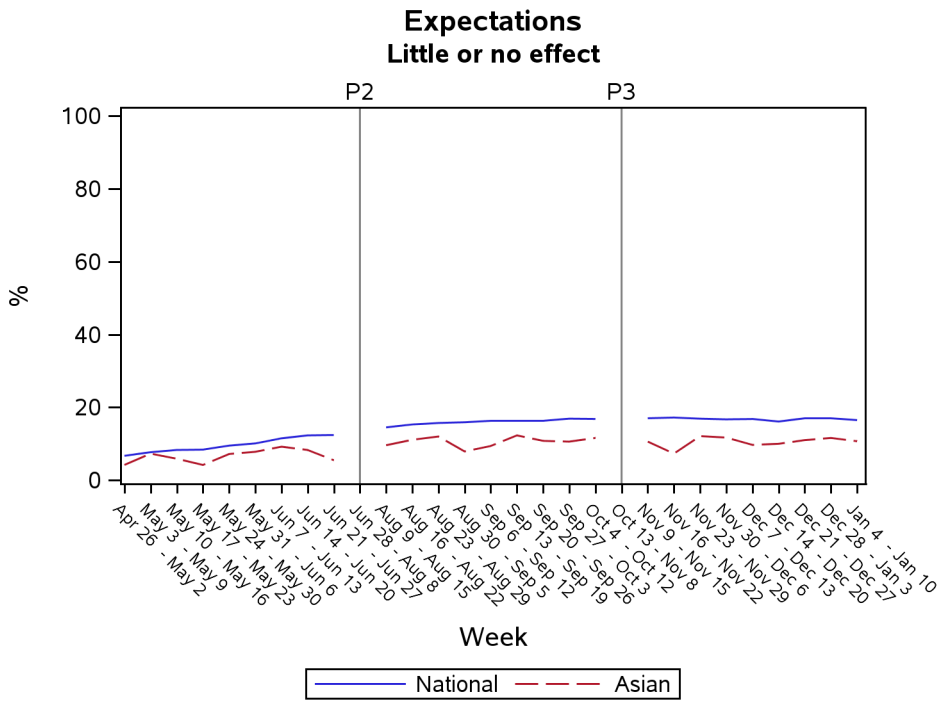

Expectations
<= 1 month
P2
P3
100
80
60
40
20
0
%
Week
National
Asian

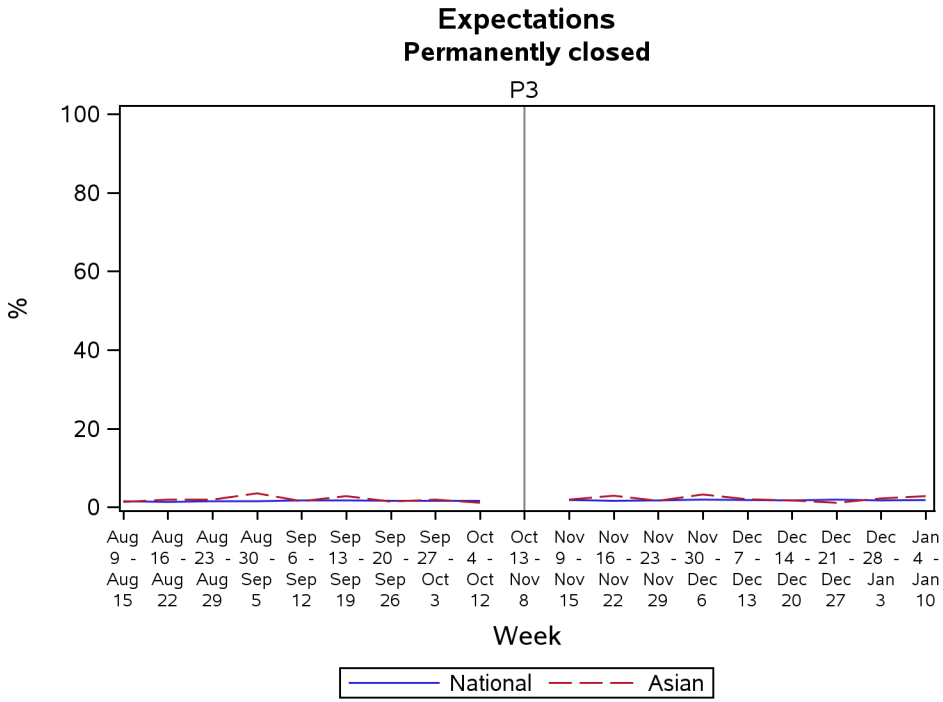

Expectations
2-3 months
P2
P3
100
80
60
40
20
0
%
Week
National
Asian

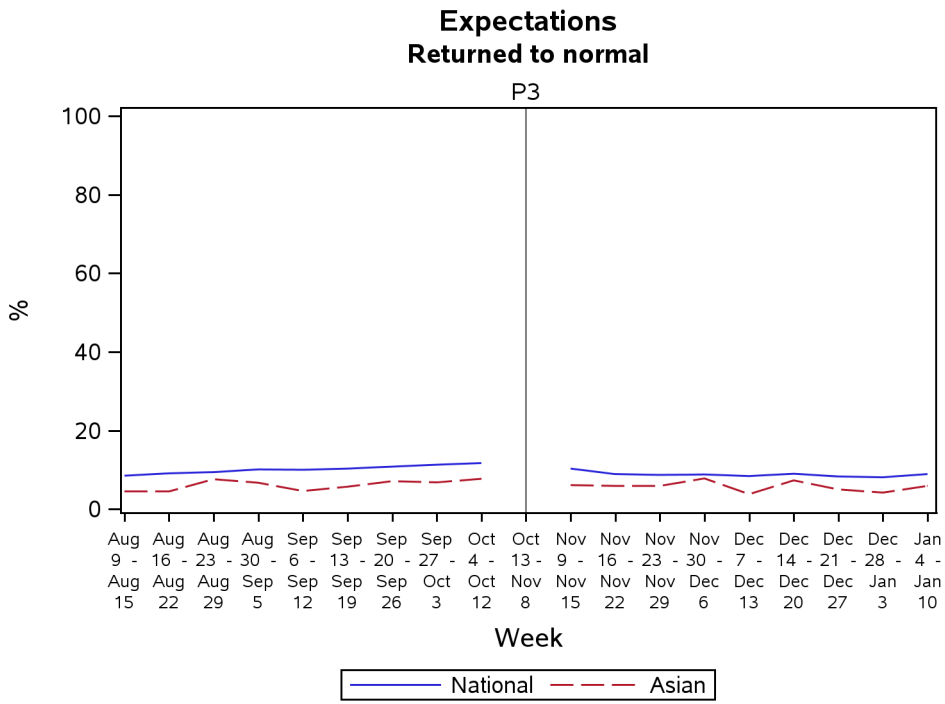

Expectations
4-6 months
P2
P3
100
80
60
40
20
0
%
Week
National
Asian


Expectations
6+ months
P2
P3
100
80
60
40
20
0
%
Week
National
Asian


Expectations
No return to normal
P2
P3
100
80
60
40
20
0
%
Week
National
Asian


Expectations
Little or no effect
P2
P3
100
80
60
40
20
0
%
Week
National
Asian


Expectations
Permanently closed
P3
100
80
60
40
20
0
%
Week
National
Asian


Expectations
Returned to normal
P3
100
80
60
40
20
0
%
Week
National
Asian

Appendix B. Owner Characteristics Published Estimates (Race Black or African American)

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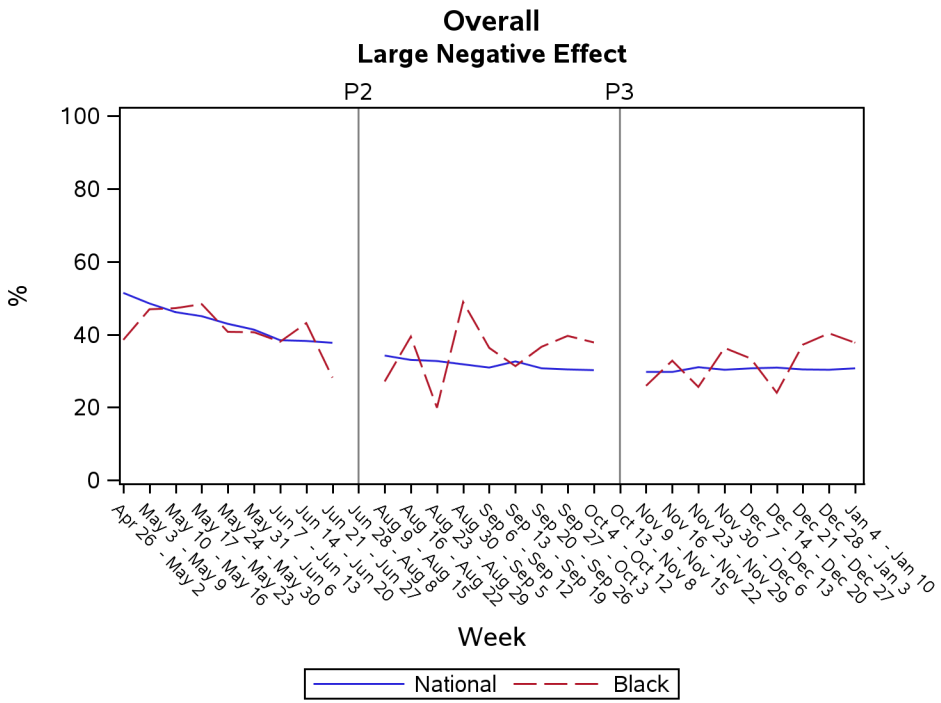
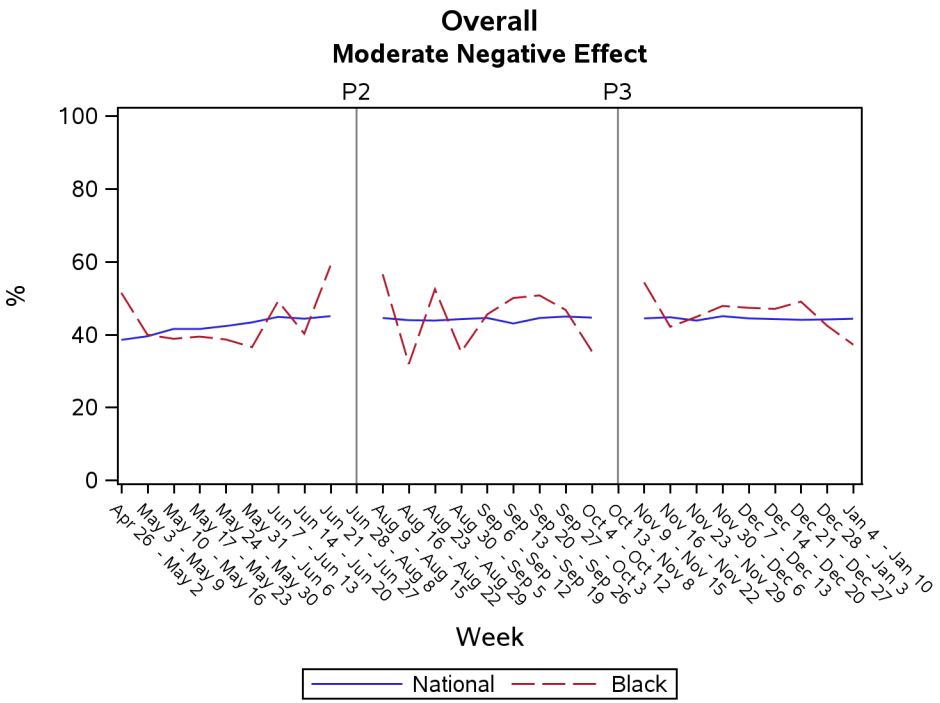
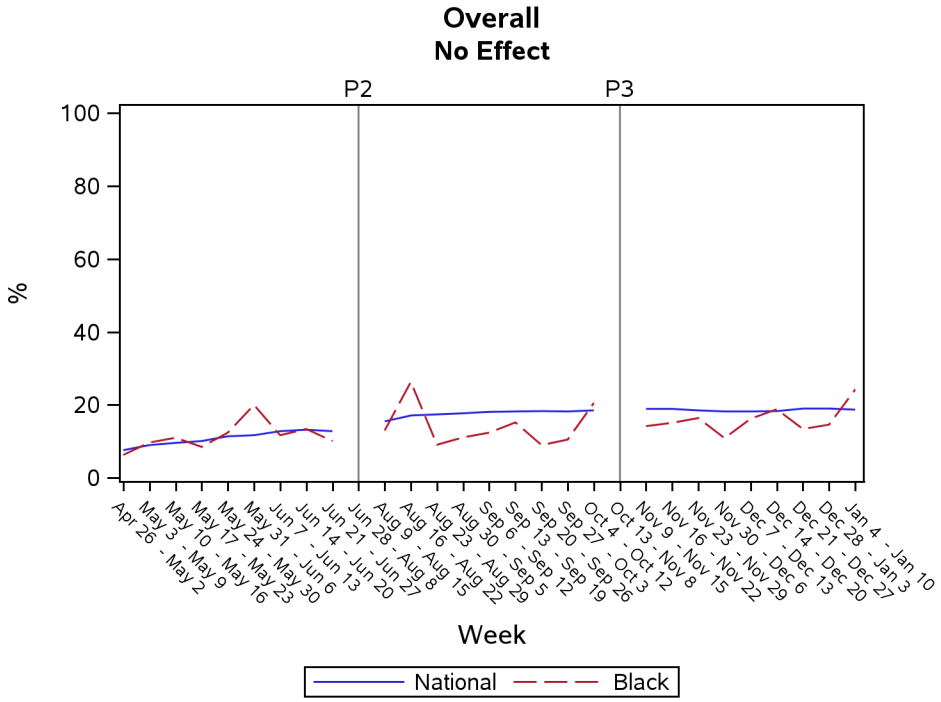
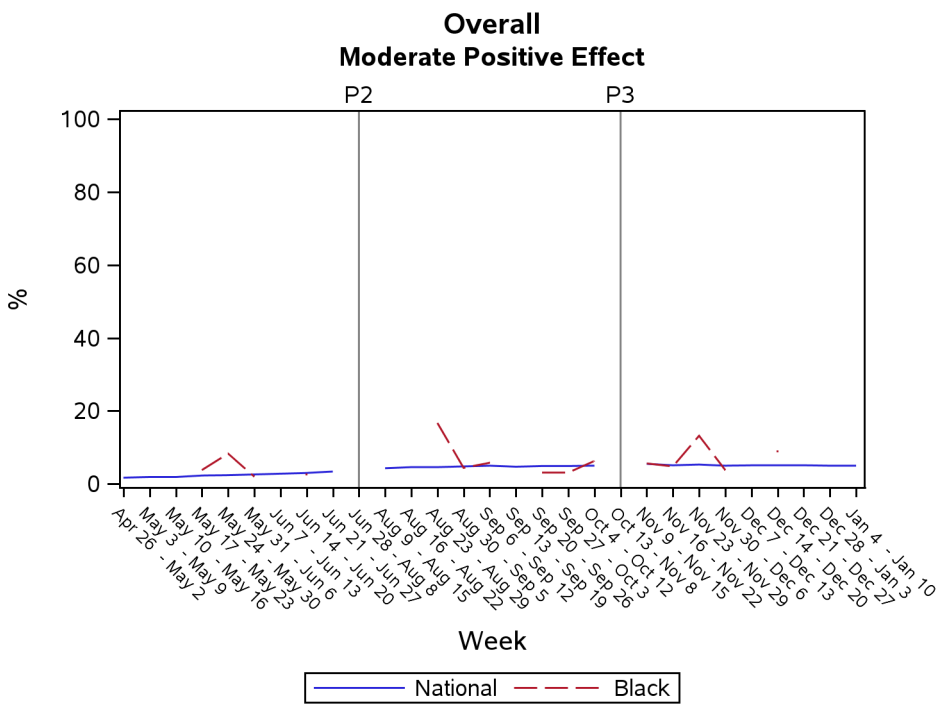
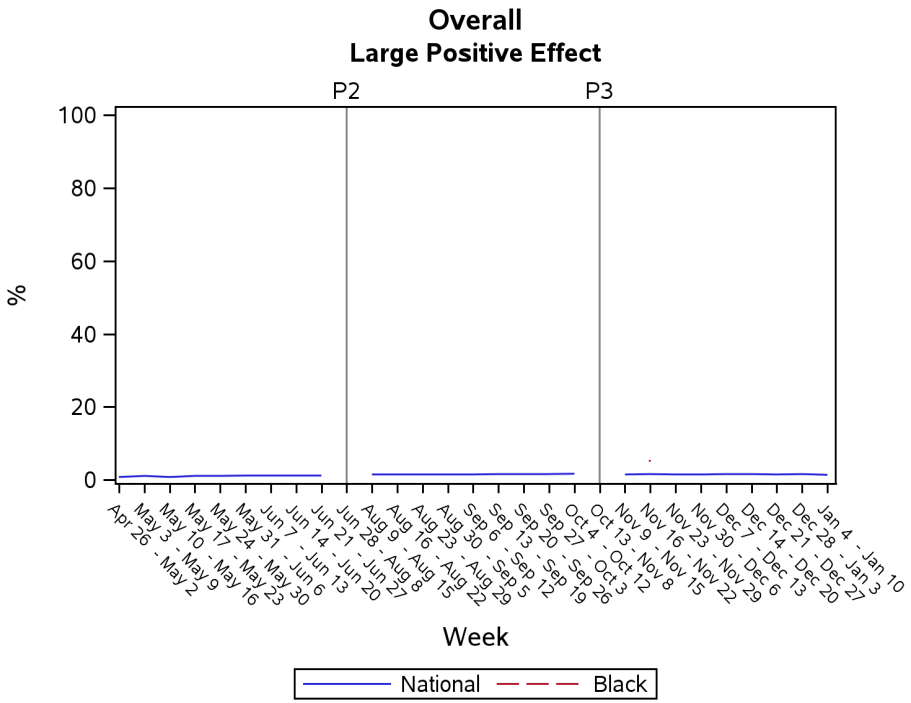
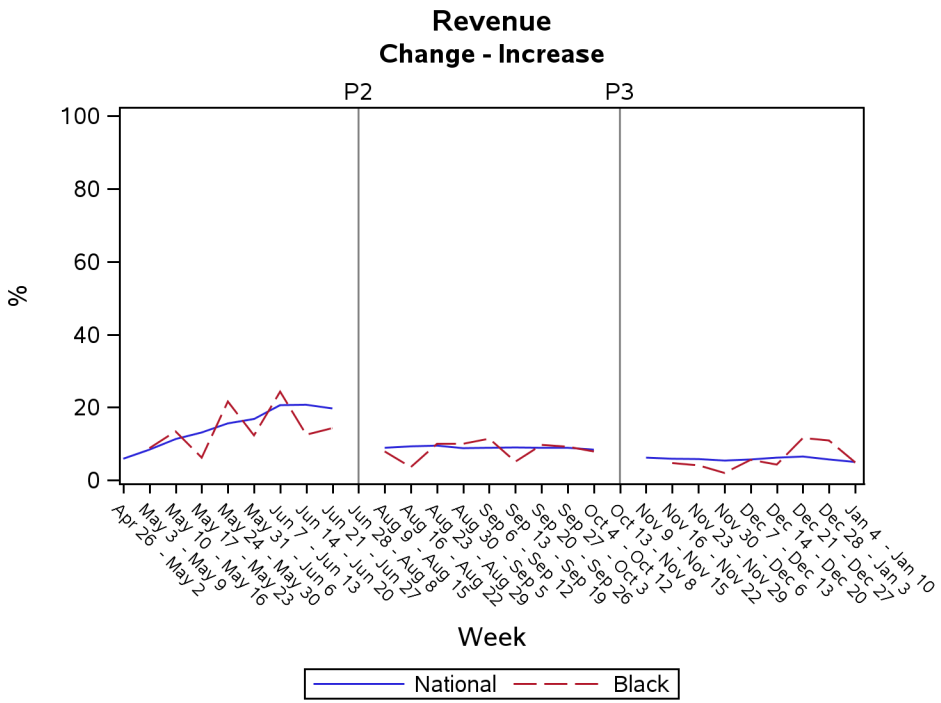

Overall
Large Negative Effect
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Black

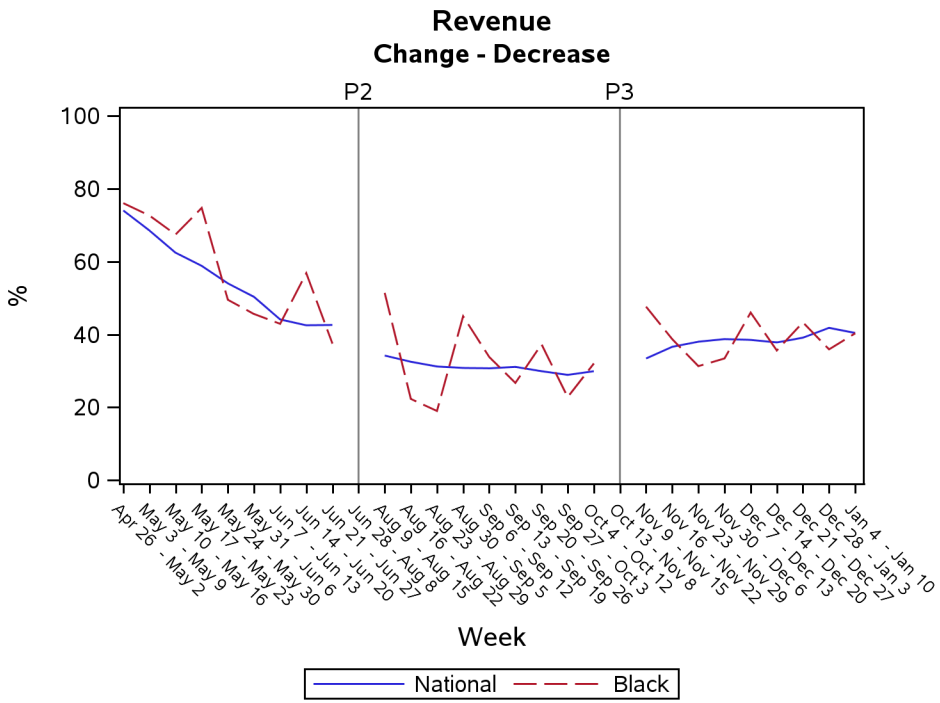

Overall
Moderate Negative Effect
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Black

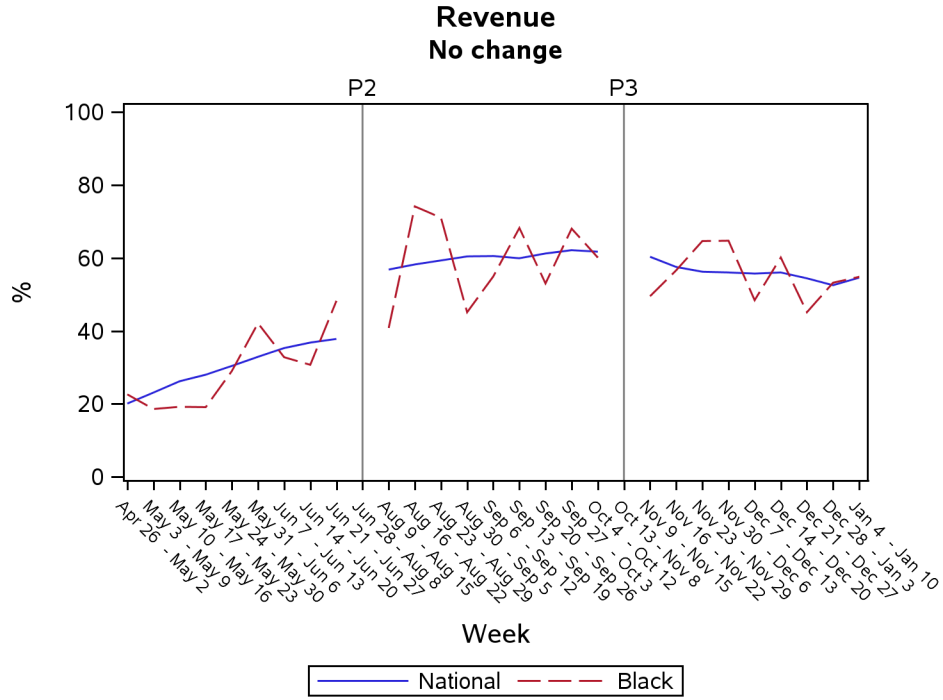

Overall
No Effect
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Black

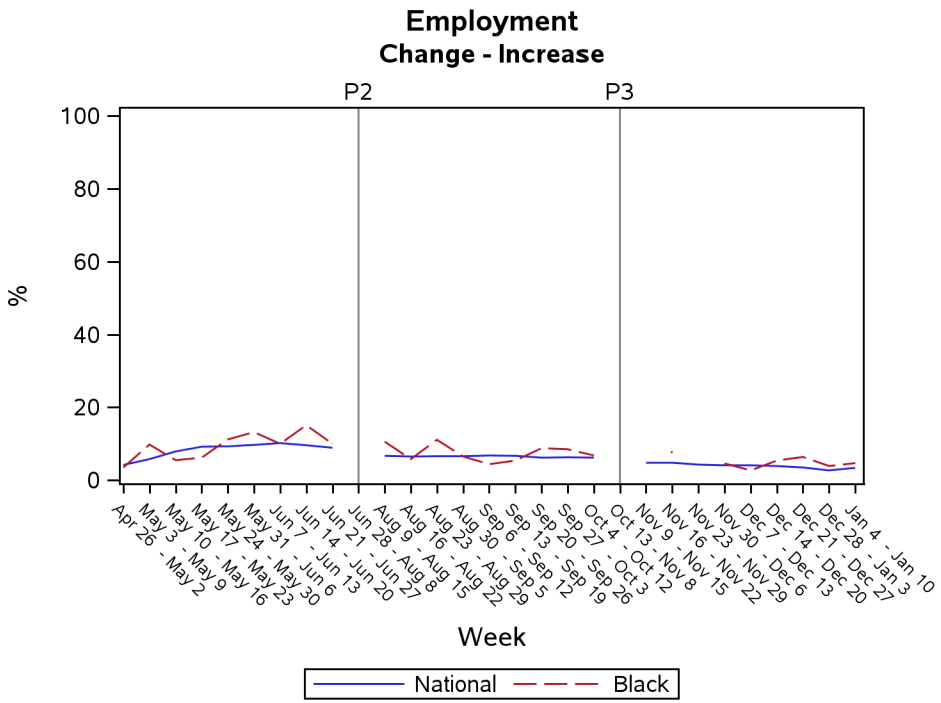

Overall
Moderate Positive Effect
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Black

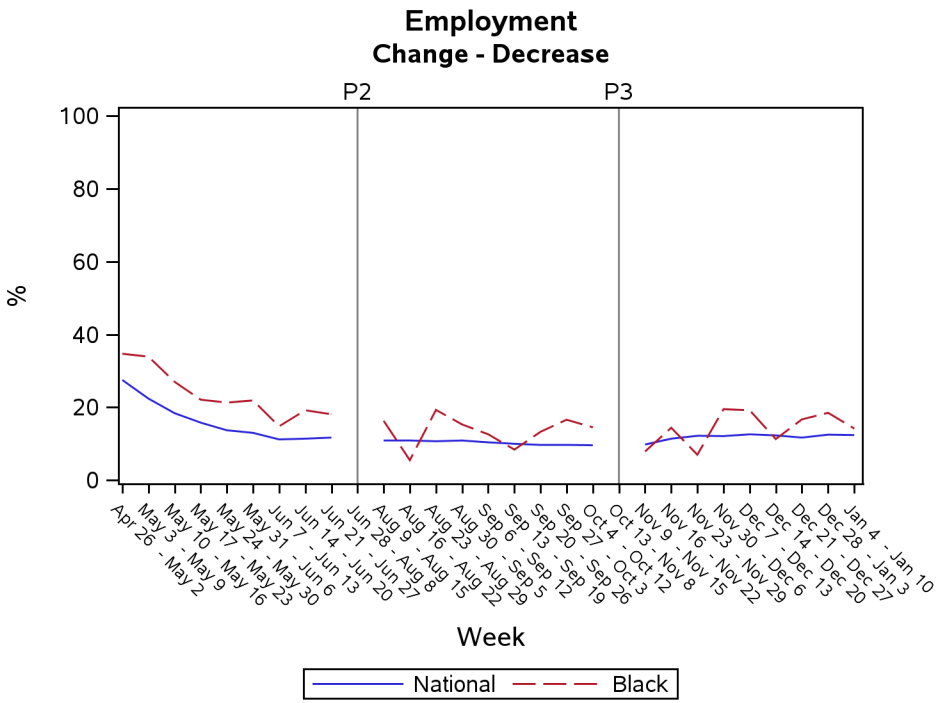

Overall
Large Positive Effect
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Aug 9 - Aug 8
Aug 16 - Aug 15
Aug 23 - Aug 22
Aug 30 - Sep 29
Sep 6 - Sep 5
Sep 13 - Sep 12
Sep 20 - Sep 19
Sep 27 - Sep 26
Oct 4 - Oct 3
Oct 13 - Oct 12
Nov 9 - Nov 8
Nov 16 - Nov 15
Nov 23 - Nov 22
Nov 30 - Nov 29
Dec 7 - Dec 6
Dec 14 - Dec 13
Dec 21 - Dec 20
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Black

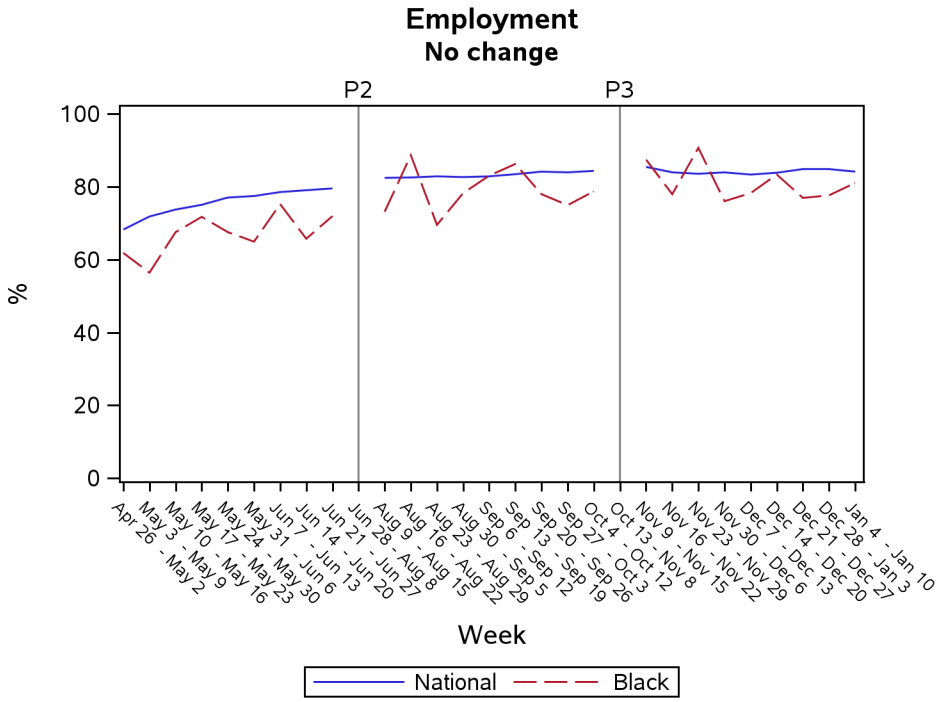

Revenue
Change - Increase
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Black

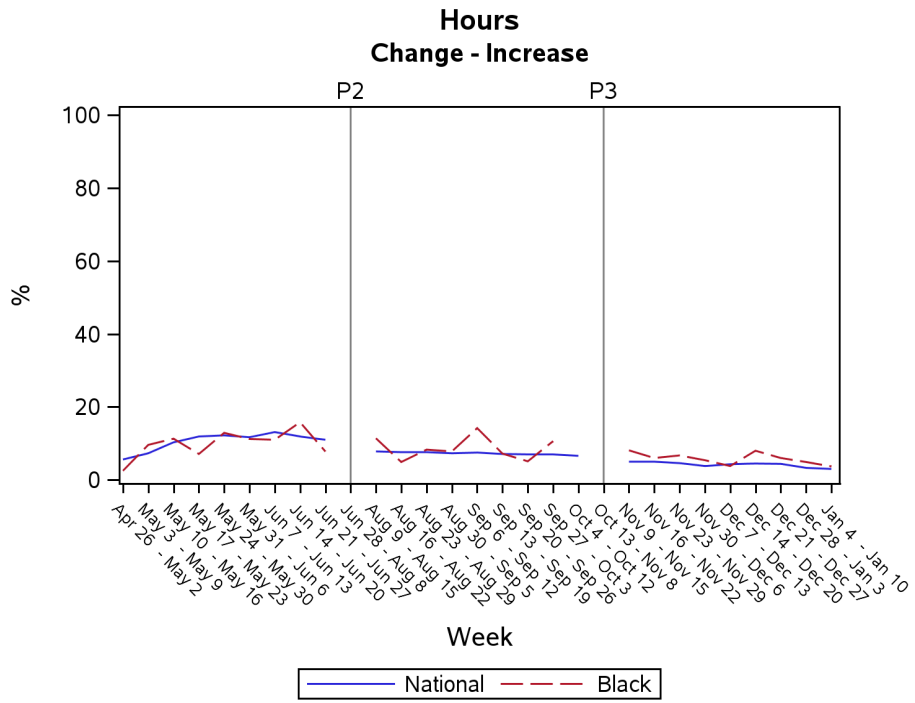

Revenue
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Black

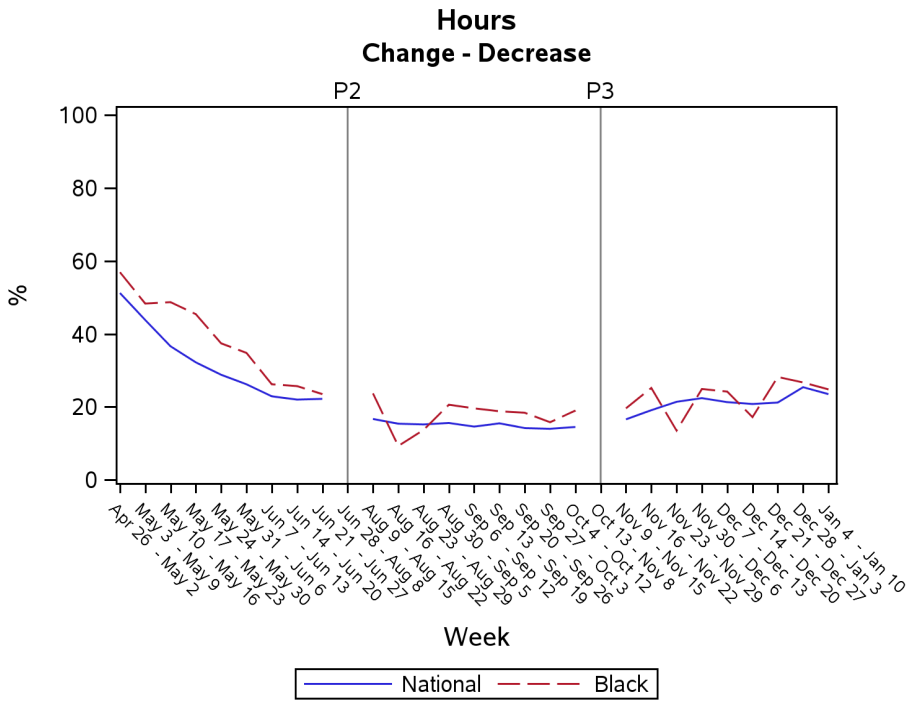

Revenue
No change
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Black

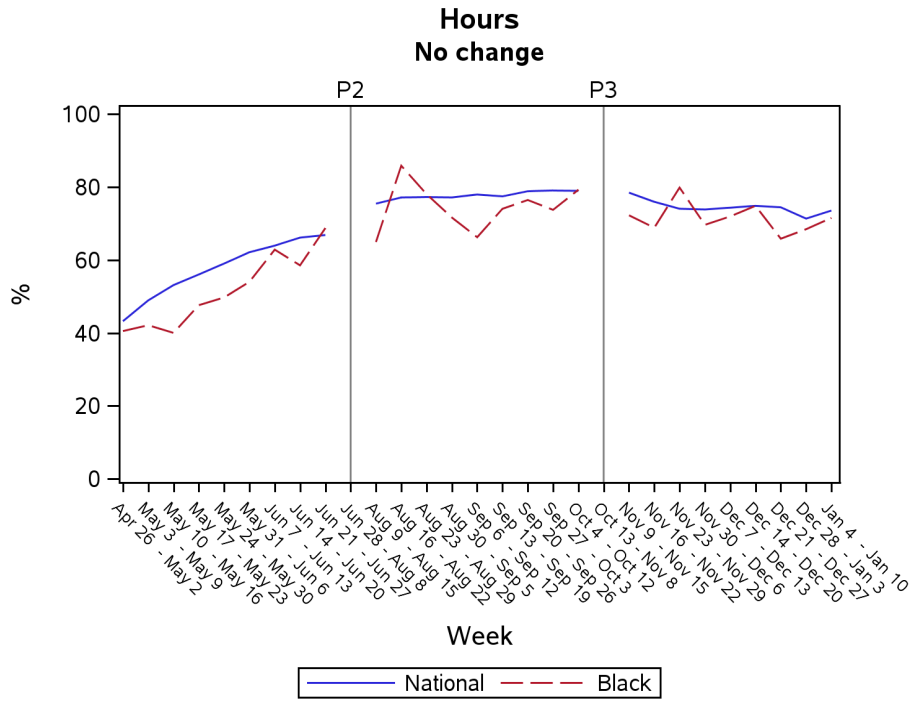

Employment
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
Black

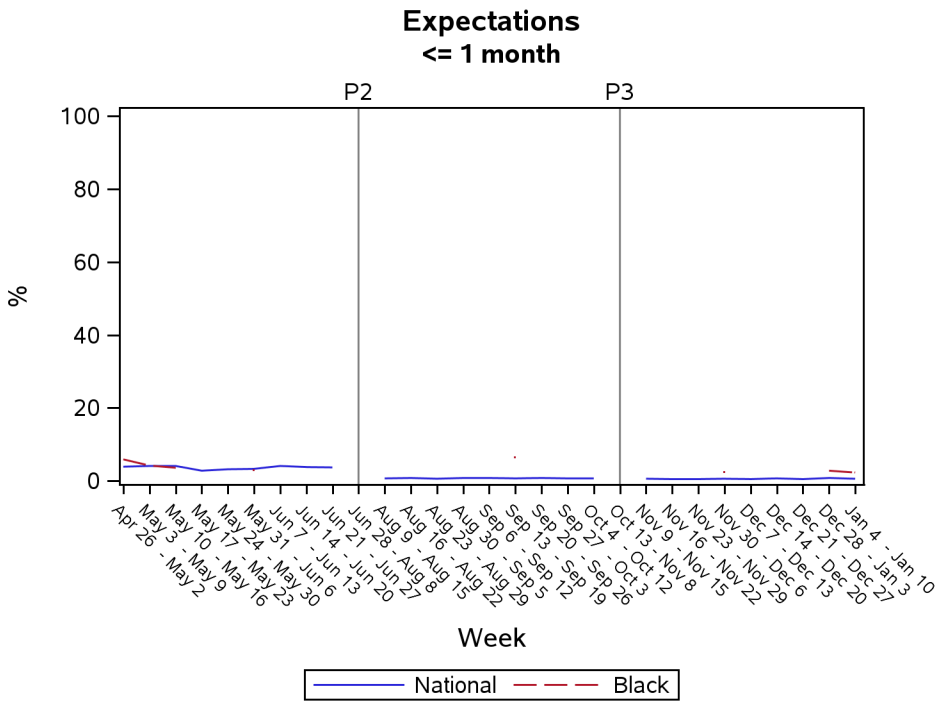

Employment
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
Black

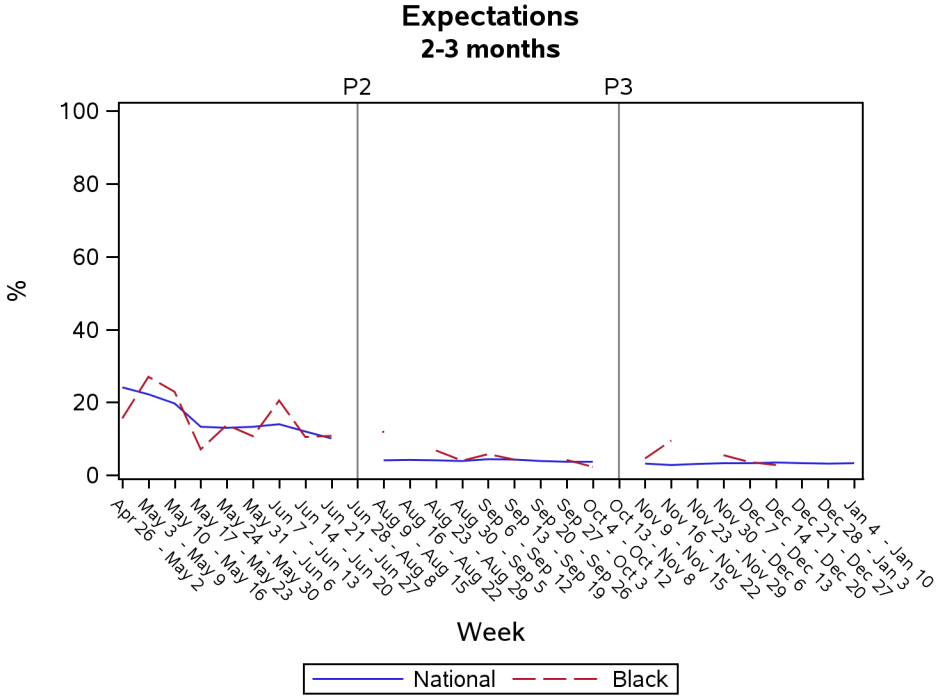

Employment
No change
P2
P3
100
80
60
40
20
0
%
Week
National
Black

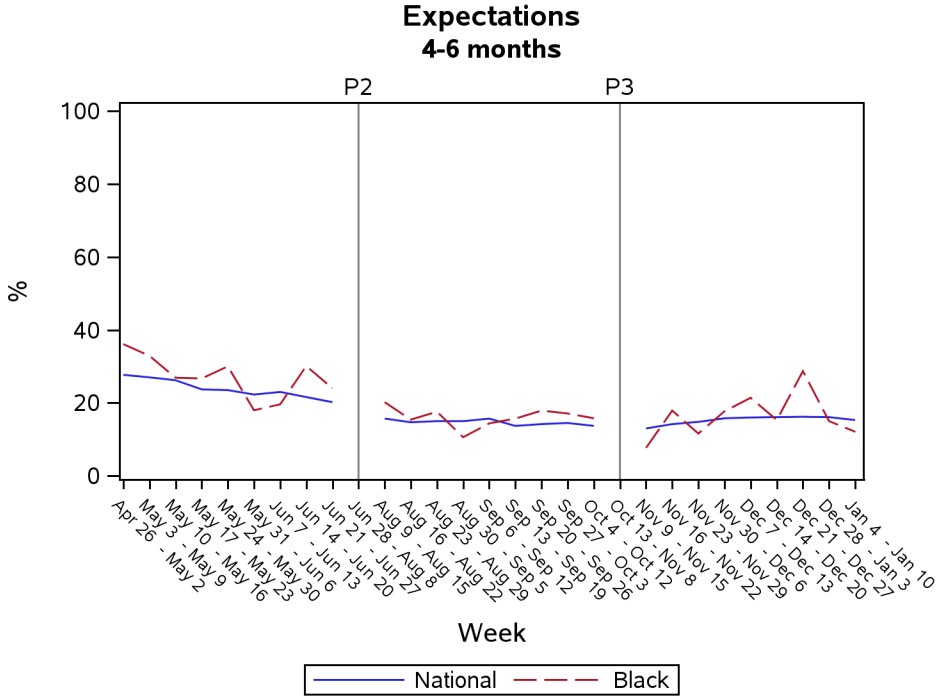

Hours
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
Black

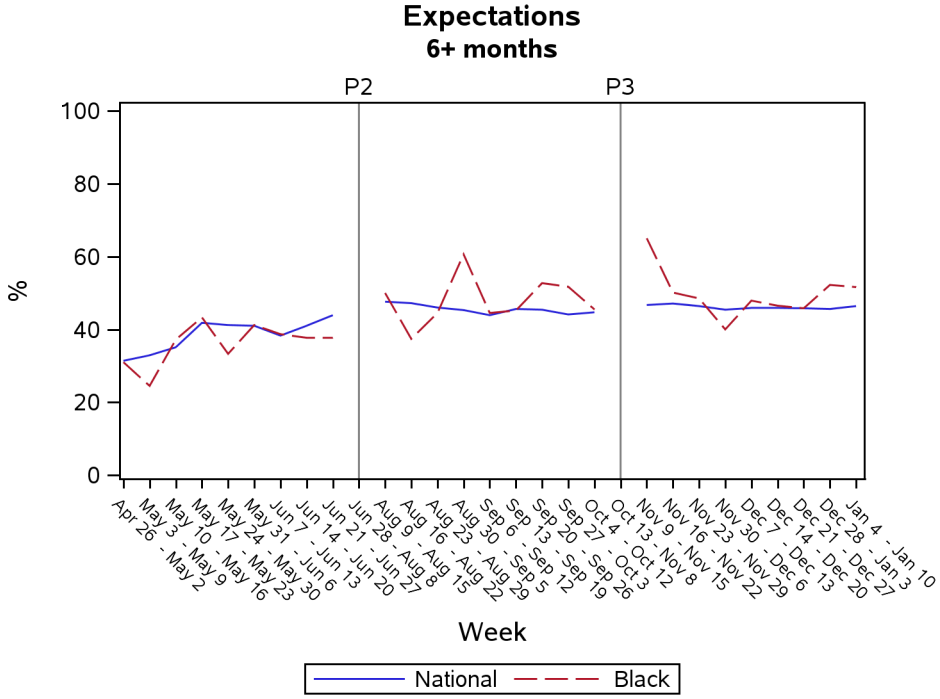

Hours
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
Black

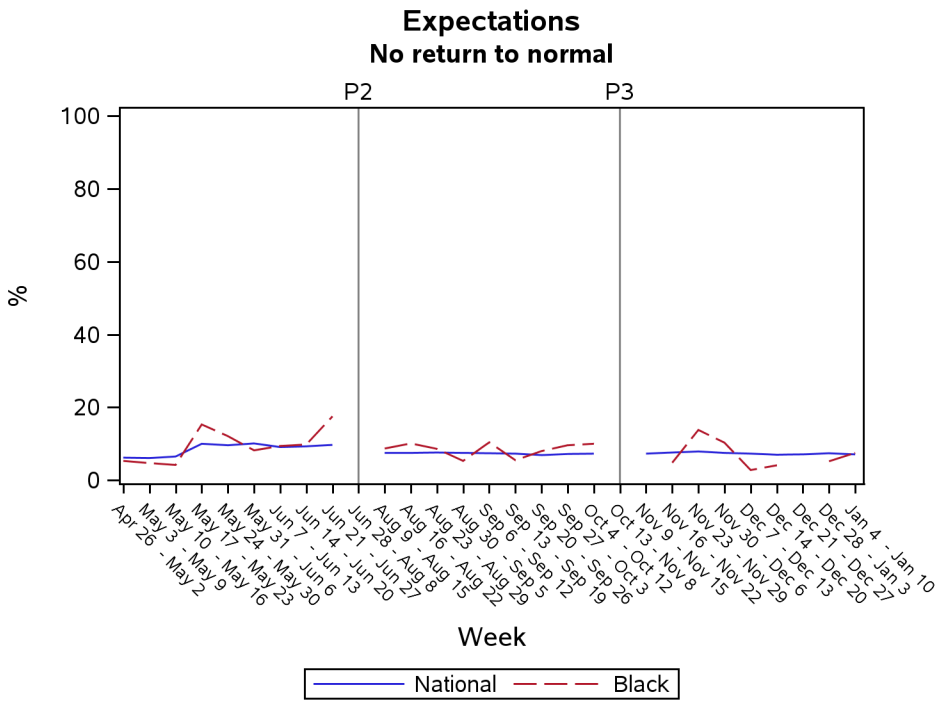

Hours
No change
P2
P3
100
80
60
40
20
0
%
Week
National
Black

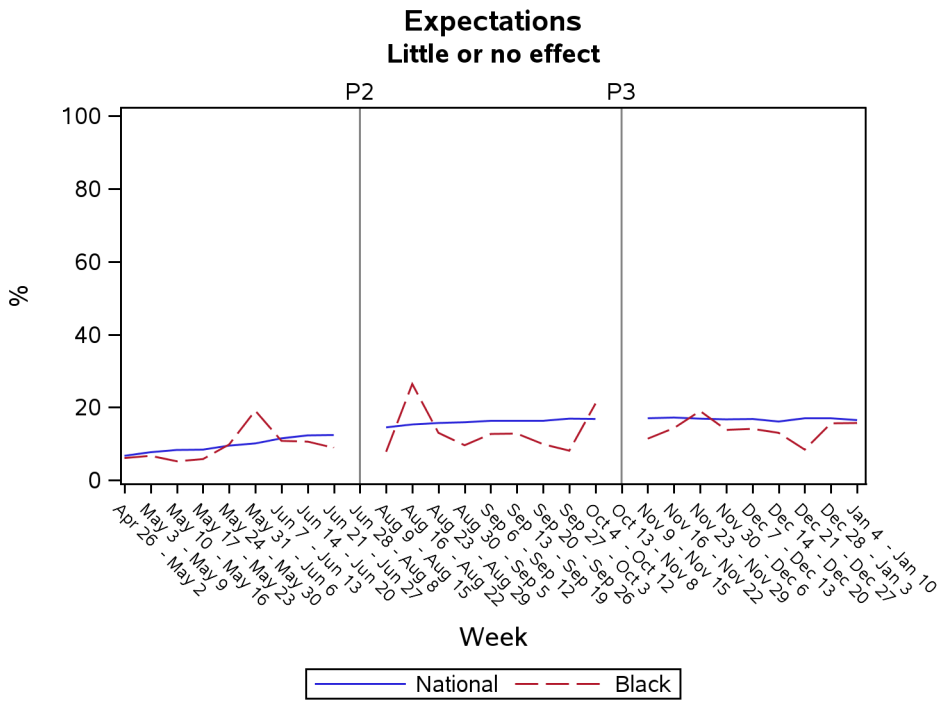

Expectations
<= 1 month
P2
P3
100
80
60
40
20
0
%
Week
National
Black

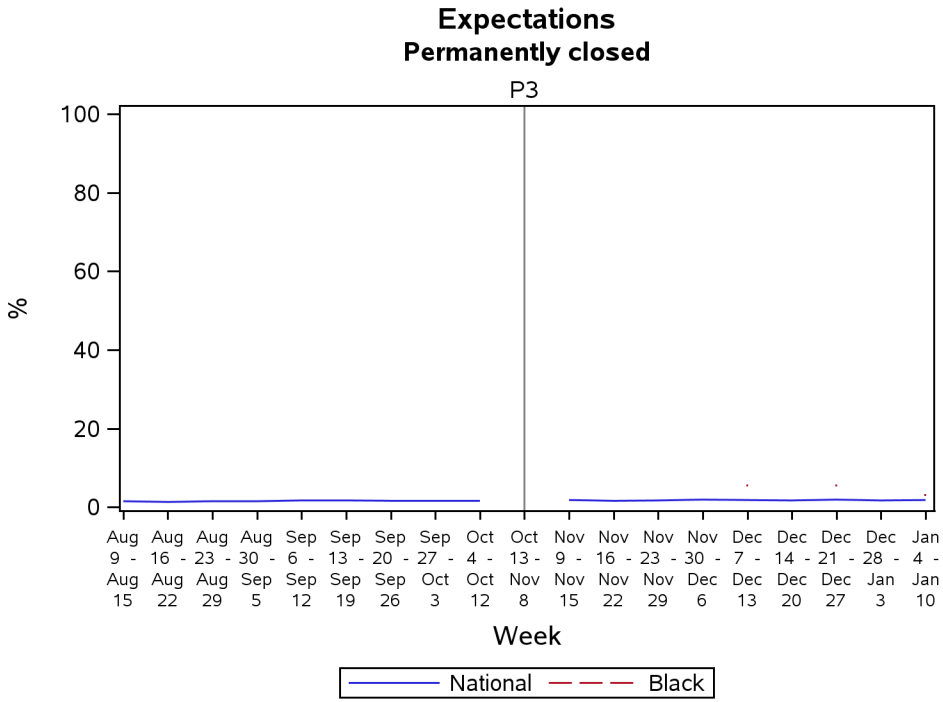

Expectations
2-3 months
P2
P3
100
80
60
40
20
0
%
Week
National
Black

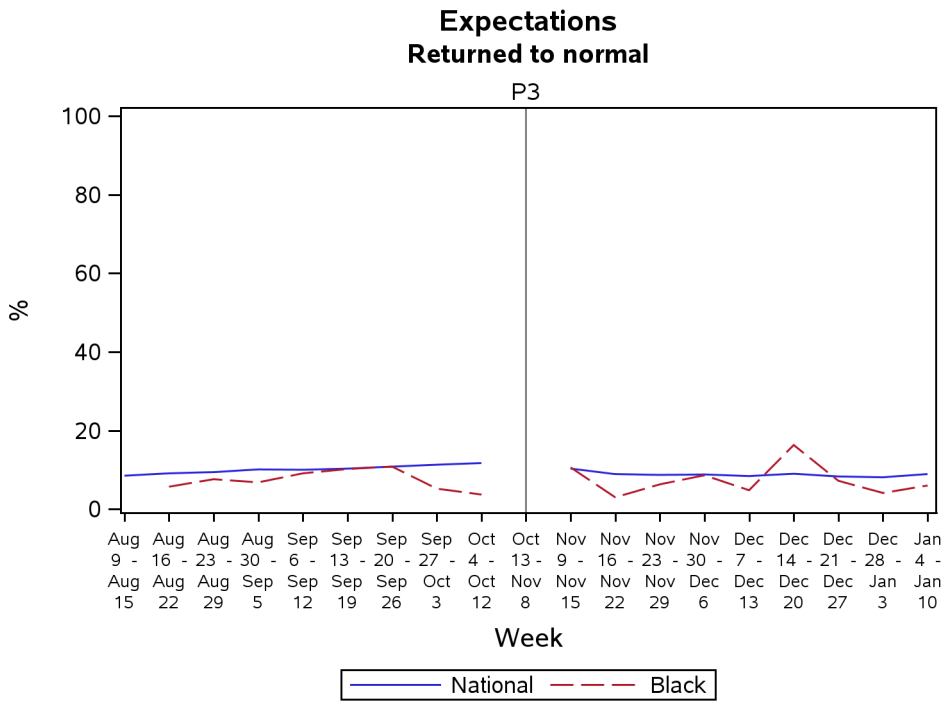

Expectations
4-6 months
P2
P3
100
80
60
40
20
0
%
Week
National
Black


Expectations
6+ months
P2
P3
100
80
60
40
20
0
%
Week
National
Black


Expectations
No return to normal
P2
P3
100
80
60
40
20
0
%
Week
National
Black


Expectations
Little or no effect
P2
P3
100
80
60
40
20
0
%
Week
National
Black


Expectations
Permanently closed
P3
100
80
60
40
20
0
%
Week
National
Black


Expectations
Returned to normal
P3
100
80
60
40
20
0
%
Week
National
Black

Appendix B. Owner Characteristics Published Estimates (Race Native Hawaiian or Other Pacific Islander (NHOPI))

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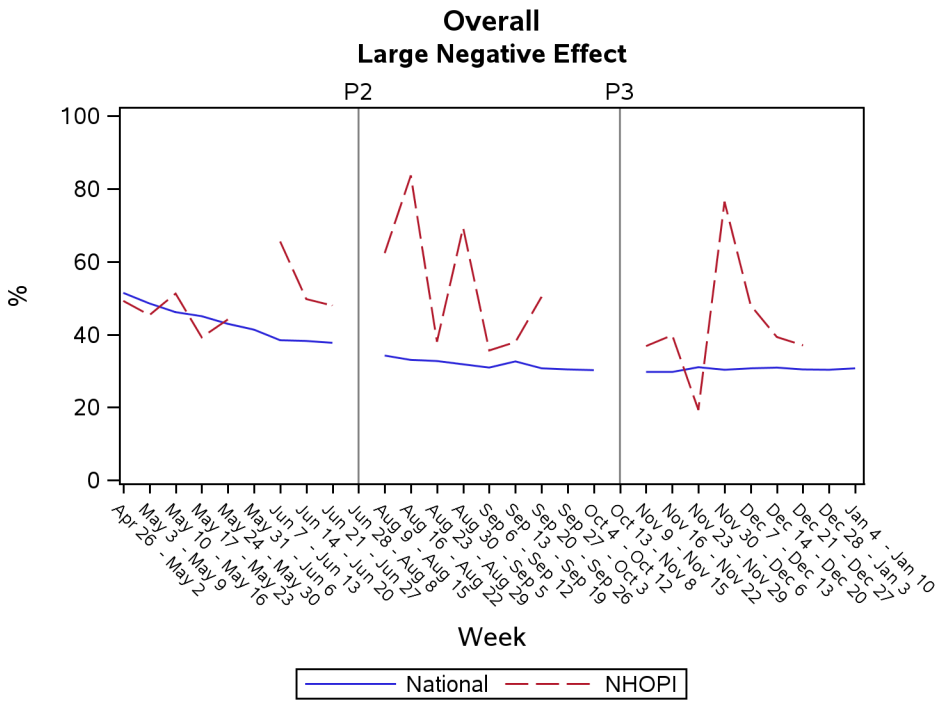
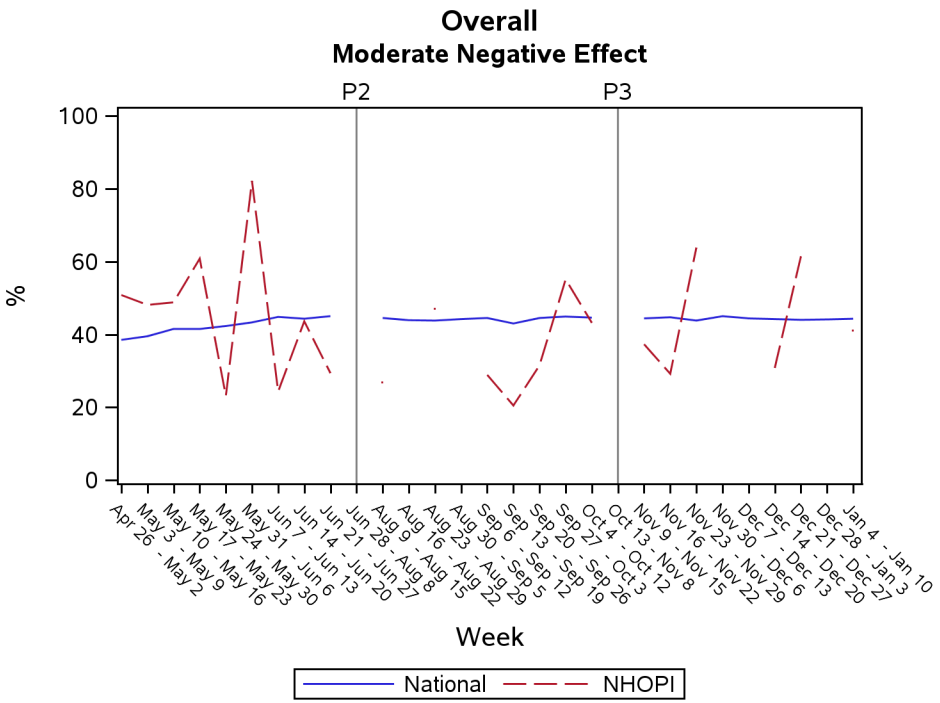
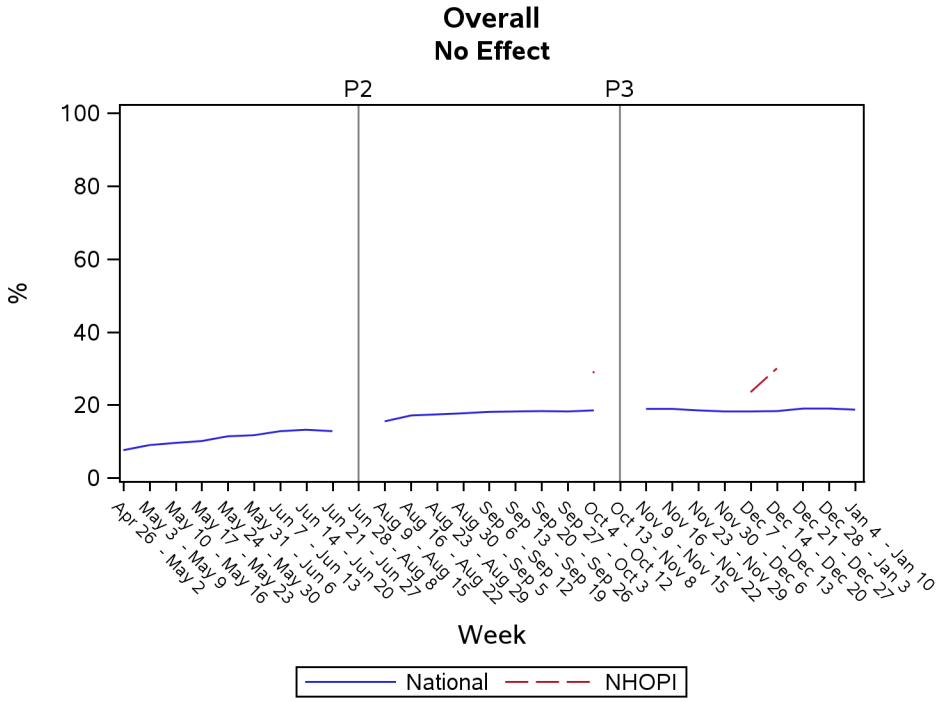
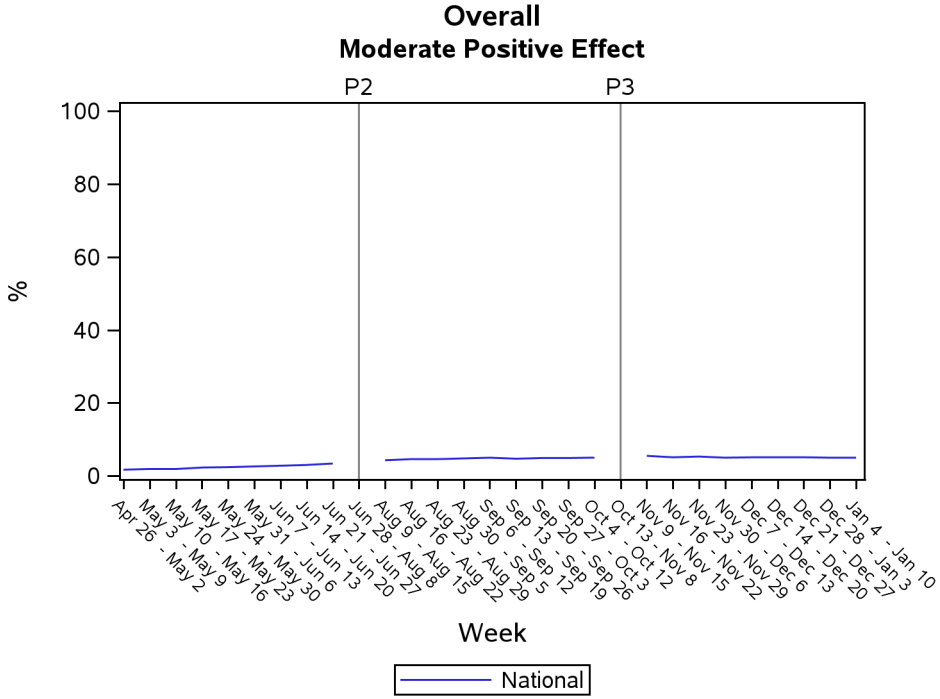
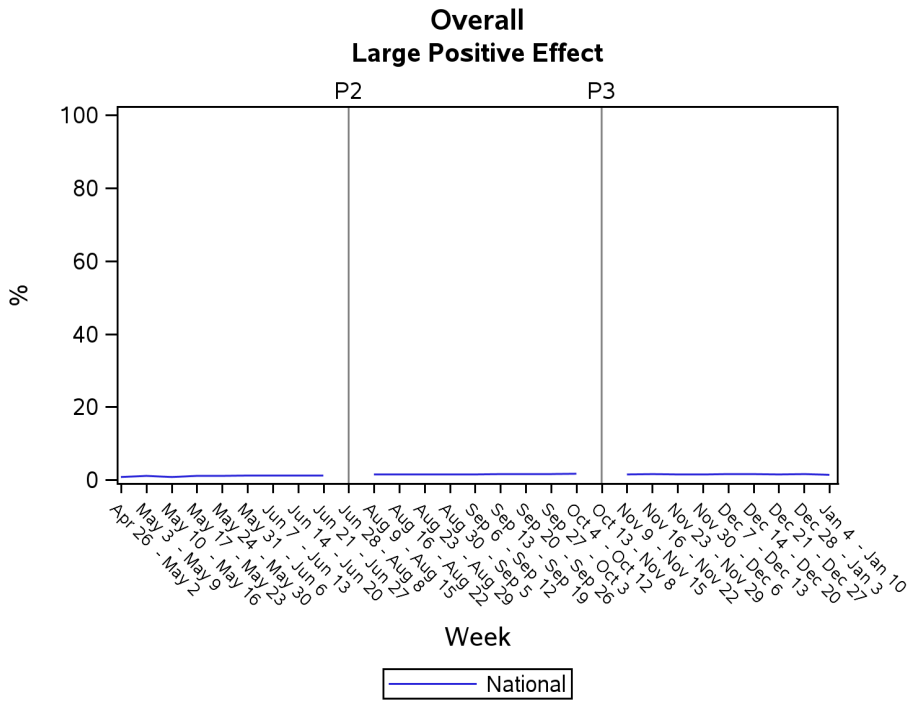
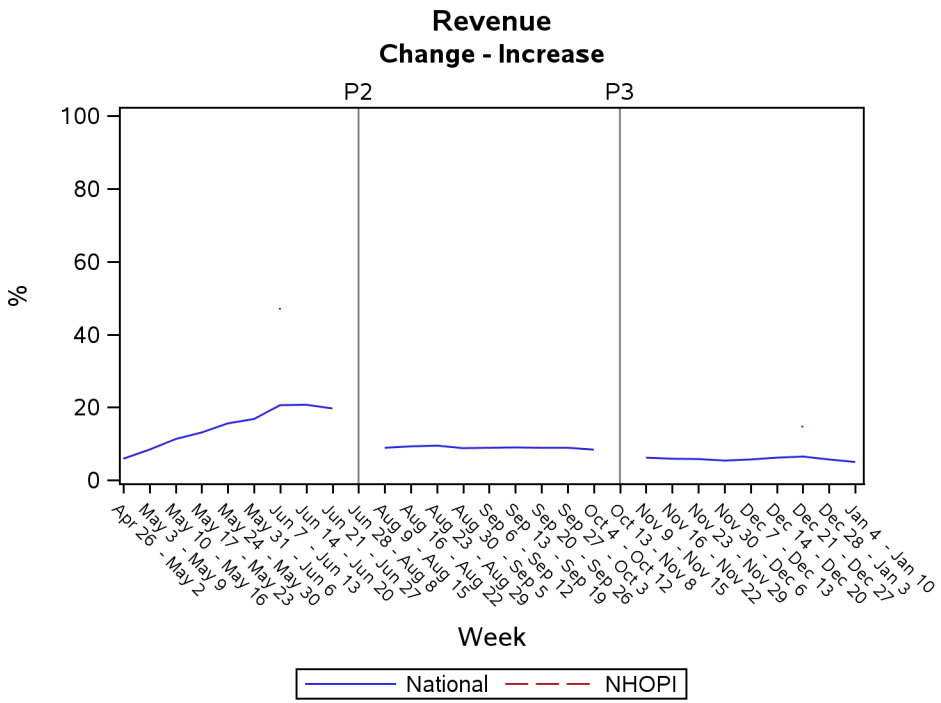

Overall
Large Negative Effect
P2
P3
100
80
60
40
20
0
%
Week
National
NHOPI

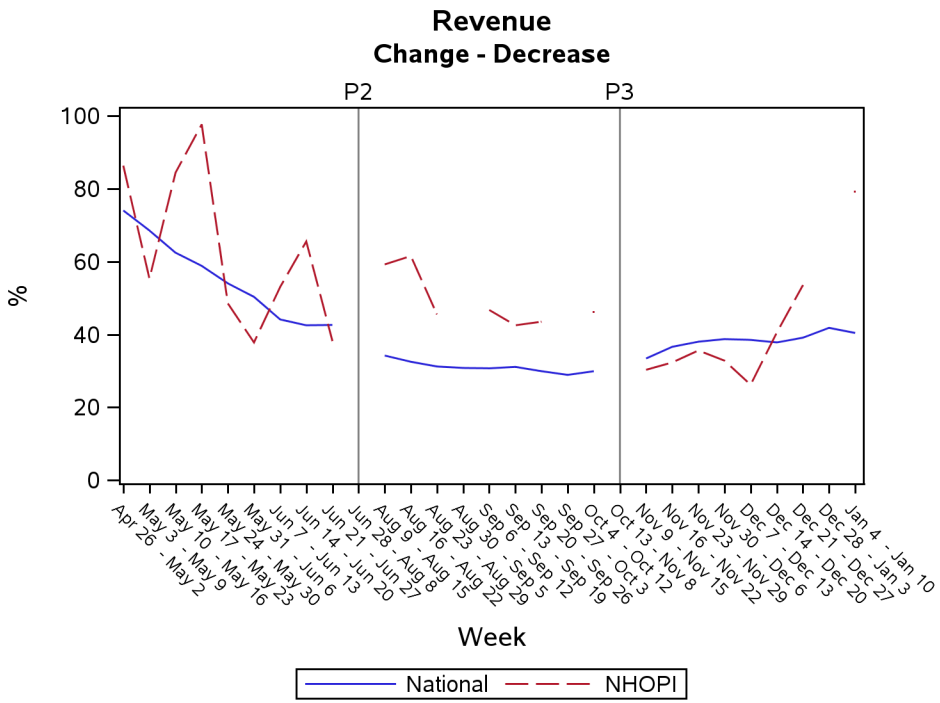

Overall
Moderate Negative Effect
P2
P3
100
80
60
40
20
0
%
Week
National
NHOPI

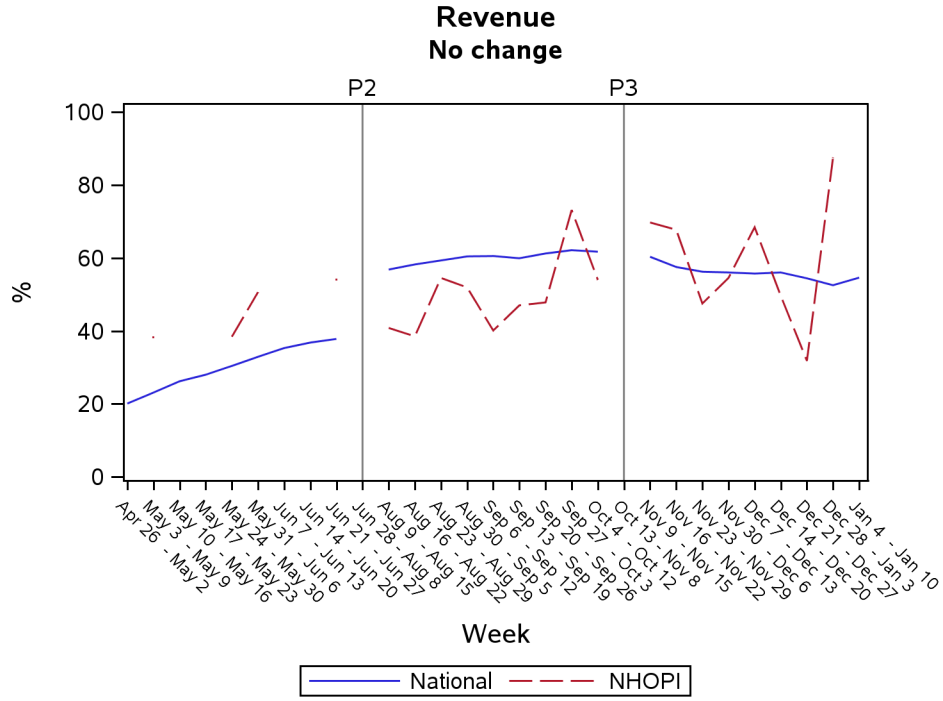

Overall
No Effect
P2
P3
100
80
60
40
20
0
%
Week
National
NHOPI

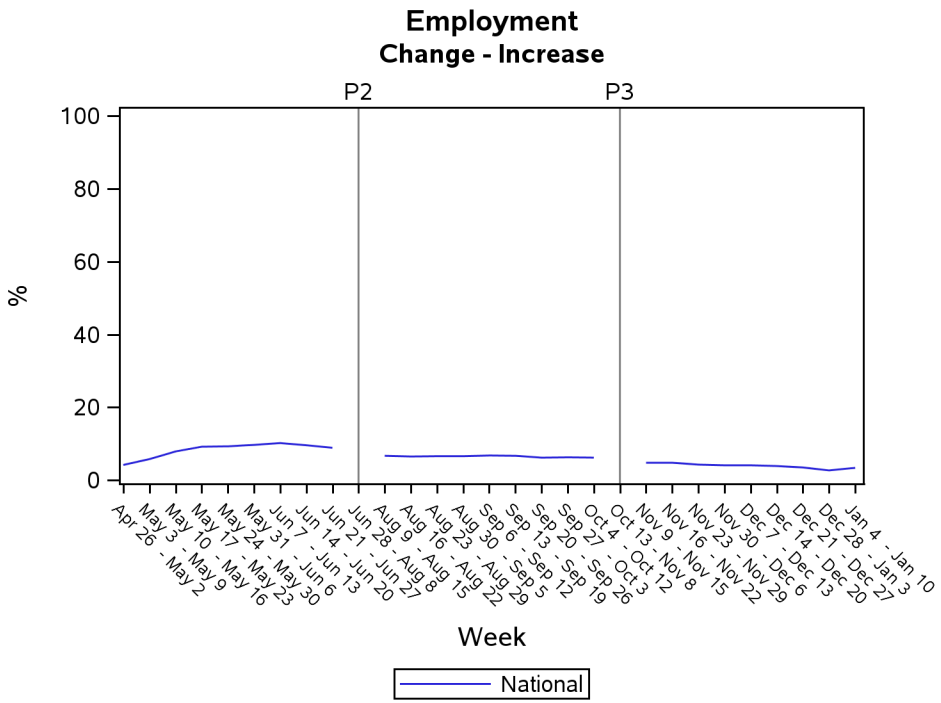

Overall
Moderate Positive Effect
P2
P3
100
80
60
40
20
0
%
Week
National

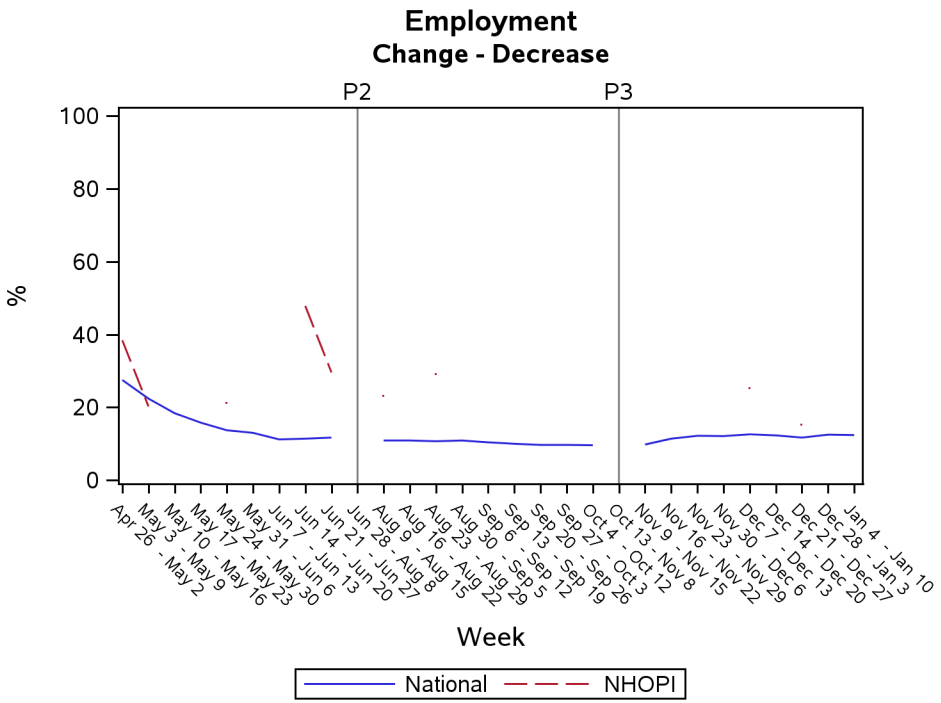

Overall
Large Positive Effect
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National


Revenue
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
NHOPI

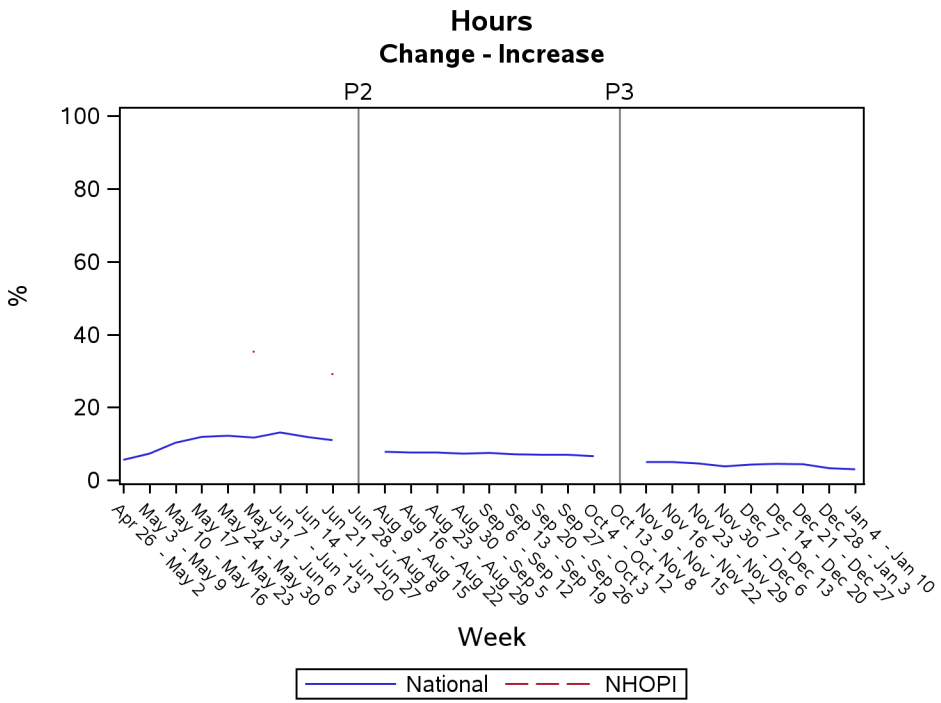

Revenue
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
NHOPI

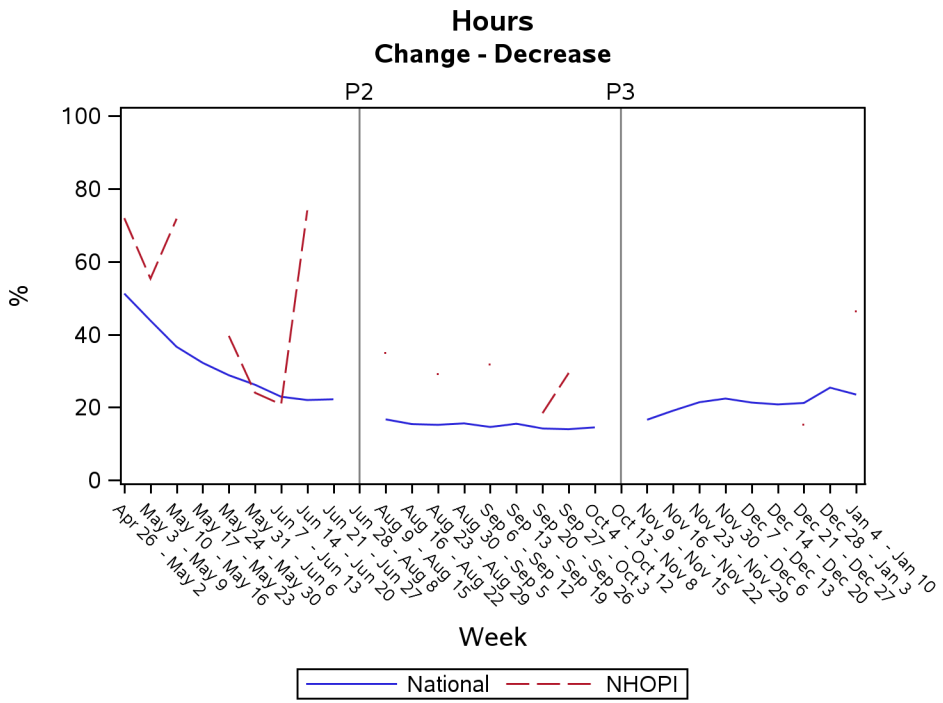

Revenue
No change
P2
P3
100
80
60
40
20
0
%
Week
National
NHOPI

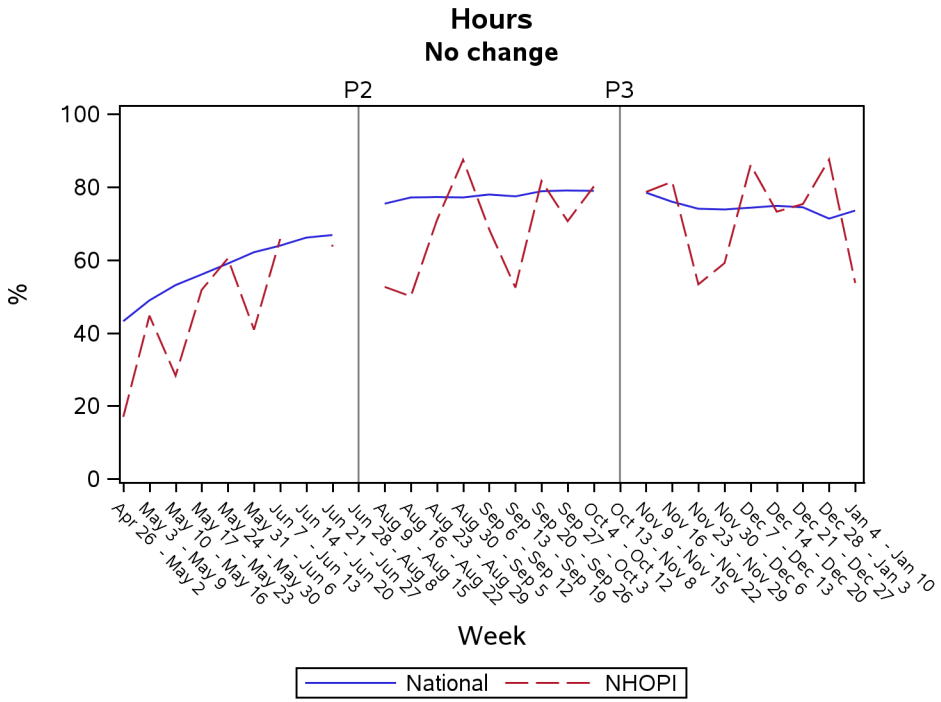

Employment
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National

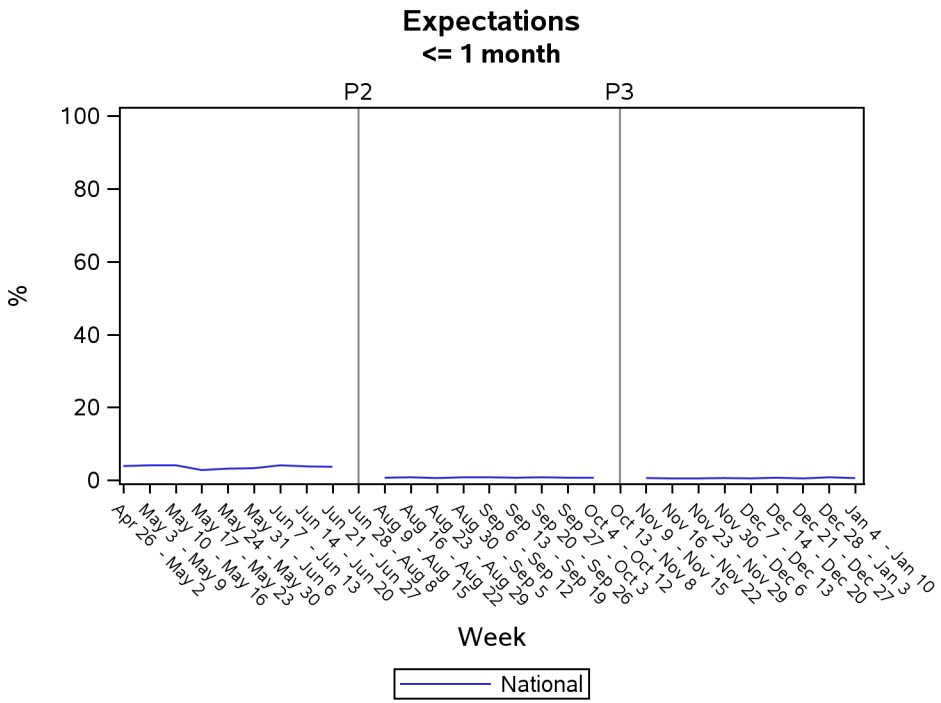

Employment
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
NHOPI

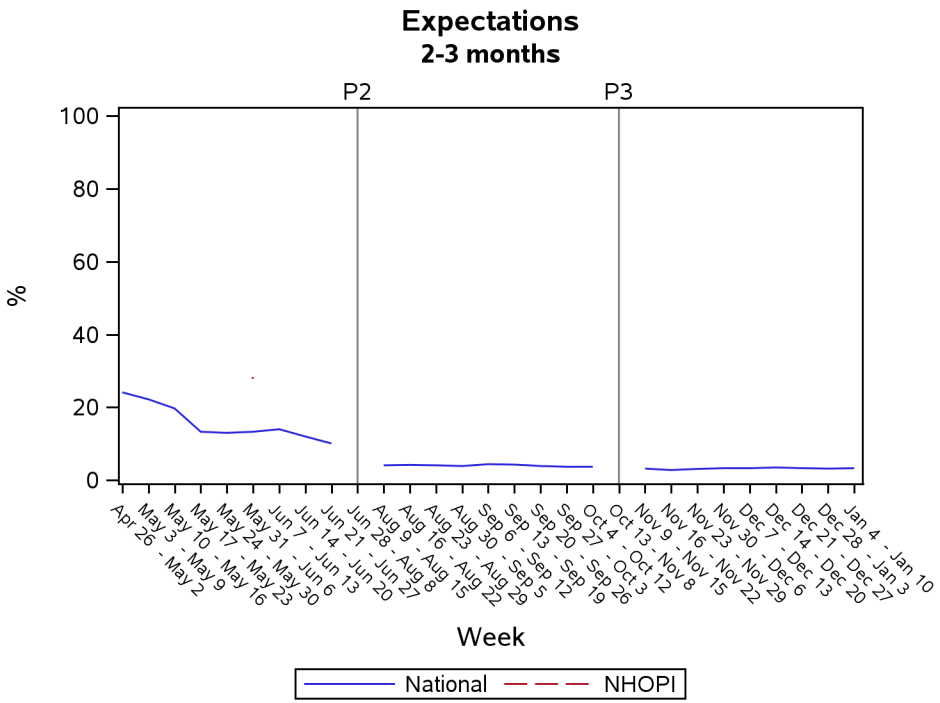

Employment
No change
P2
P3
100
80
60
40
20
0
%
Week
National
NHOPI

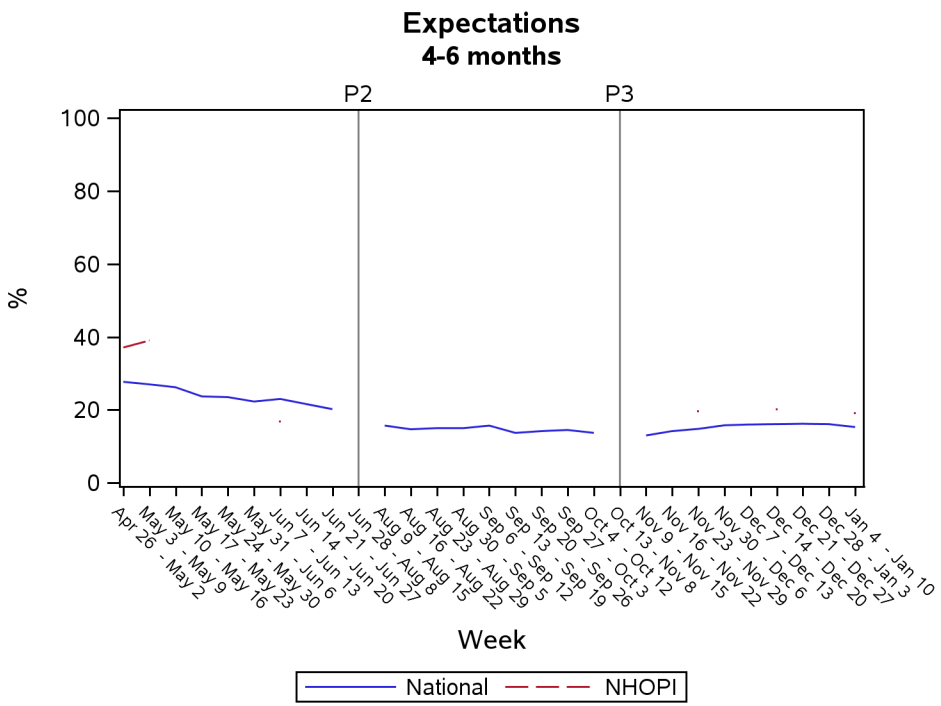

Hours
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
NHOPI

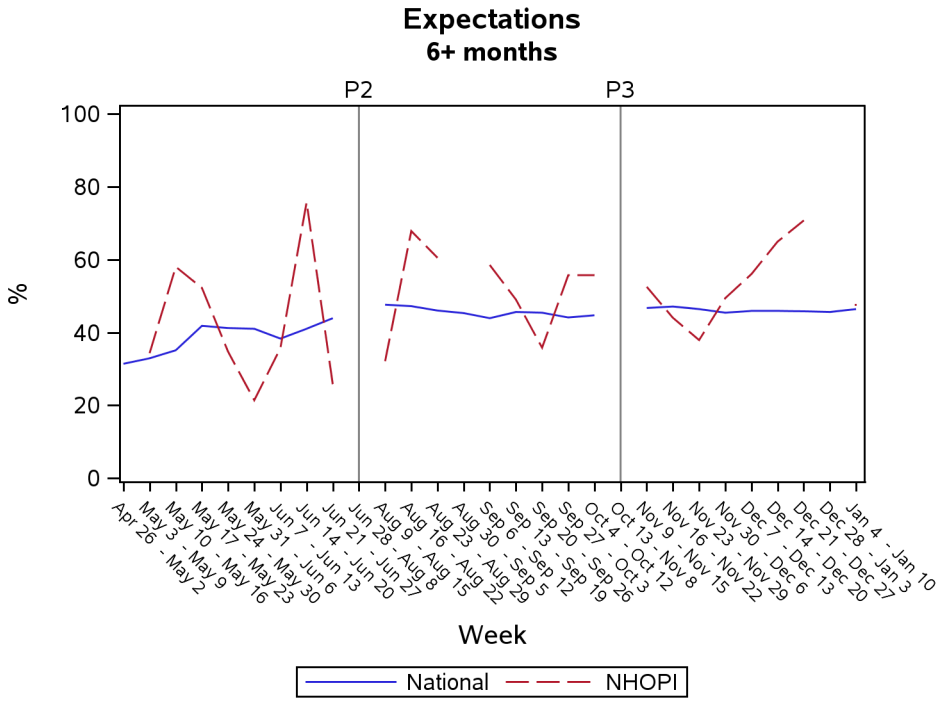

Hours
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
NHOPI

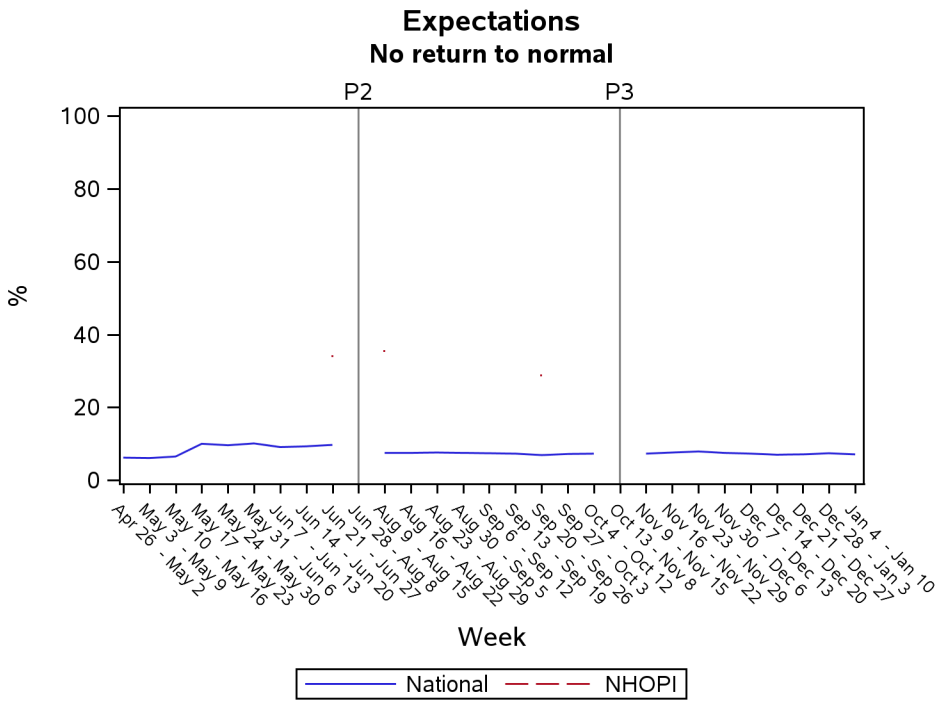

Hours
No change
P2
P3
100
80
60
40
20
0
%
Week
National
NHOPI

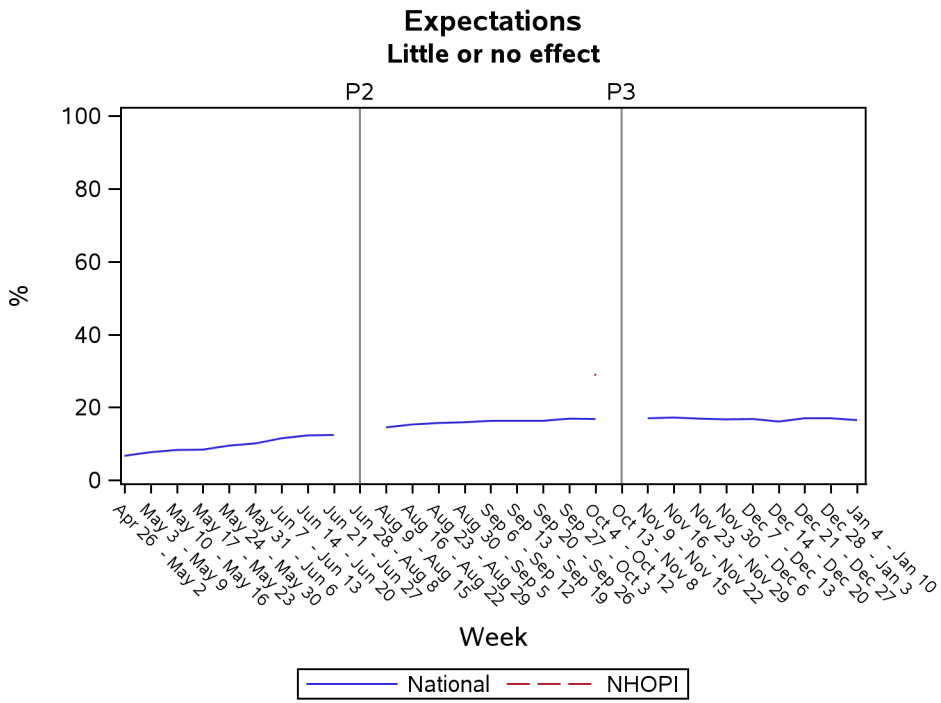

Expectations
<= 1 month
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National

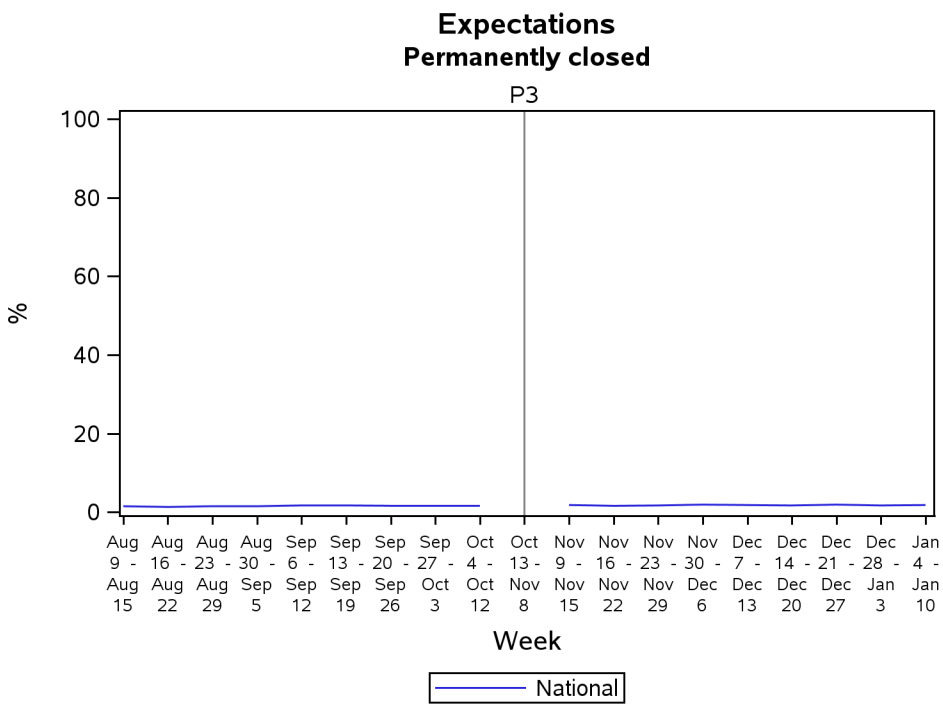

Expectations
2-3 months
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
NHOPI

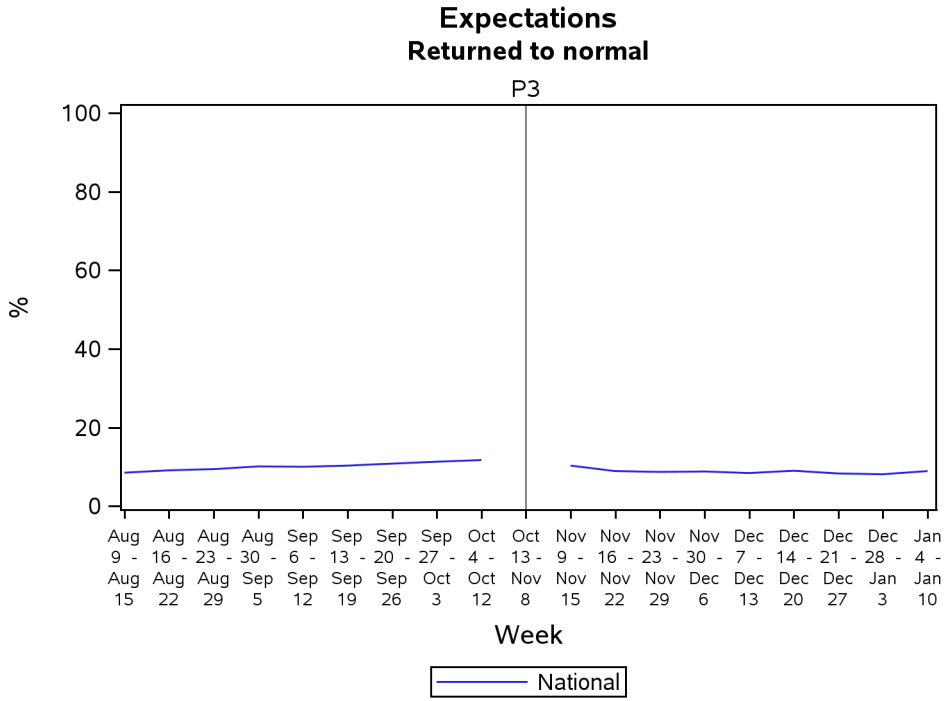

Expectations
4-6 months
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
NHOPI


Expectations
6+ months
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
NHOPI


Expectations
No return to normal
P2
P3
100
80
60
40
20
0
%
Week
National
NHOPI


Expectations
Little or no effect
P2
P3
100
80
60
40
20
0
%
Week
National
NHOPI


Expectations
Permanently closed
P3
100
80
60
40
20
0
%
Week
National


Expectations
Returned to normal
P3
100
80
60
40
20
0
%
Week
National

Appendix B. Owner Characteristics Published Estimates (Race White)

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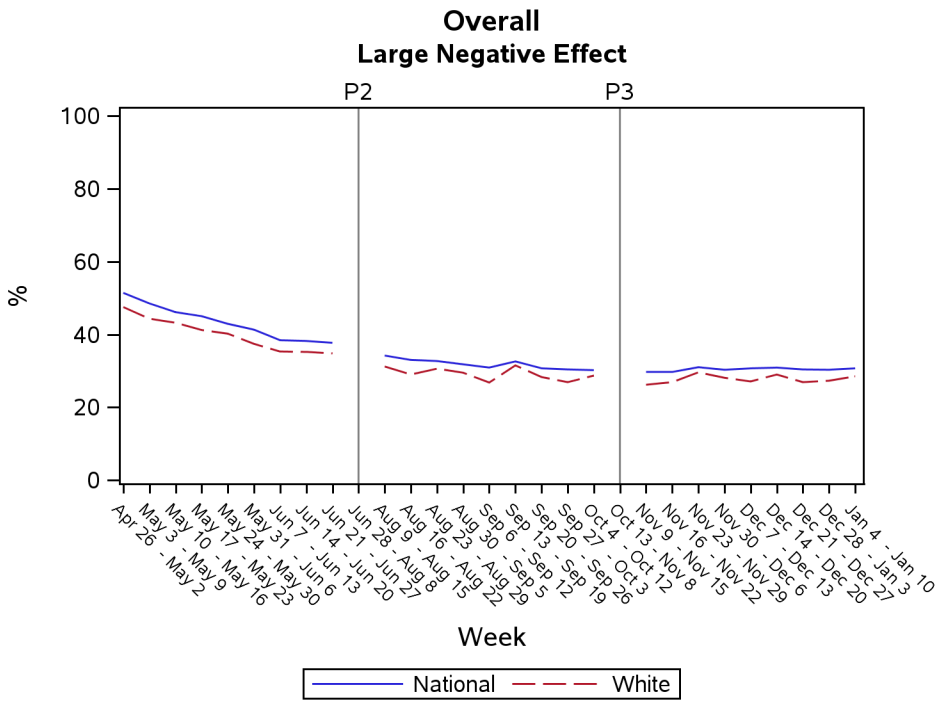
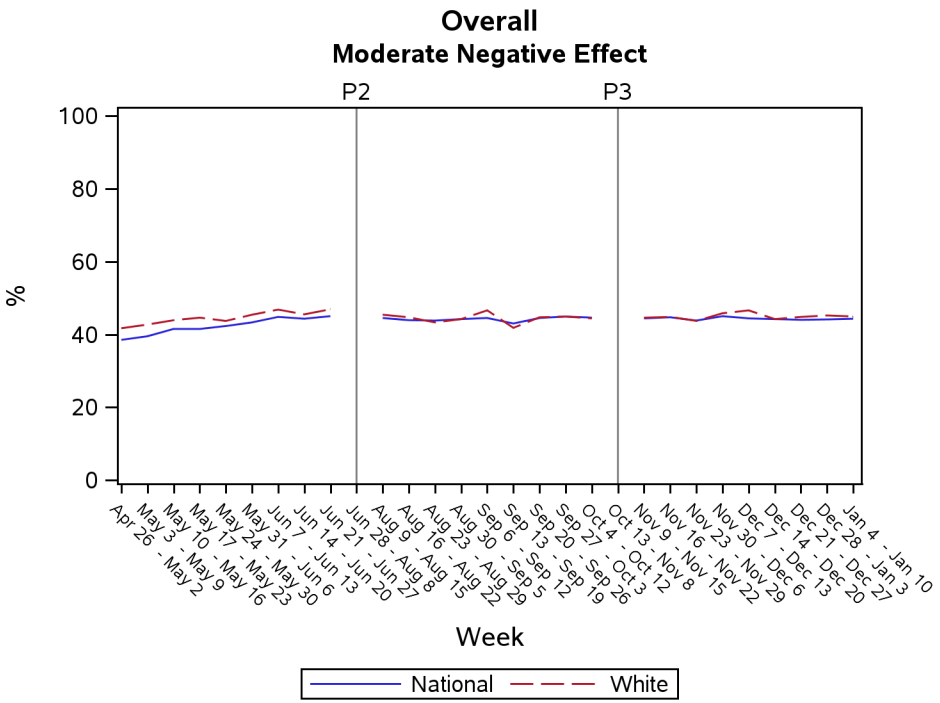
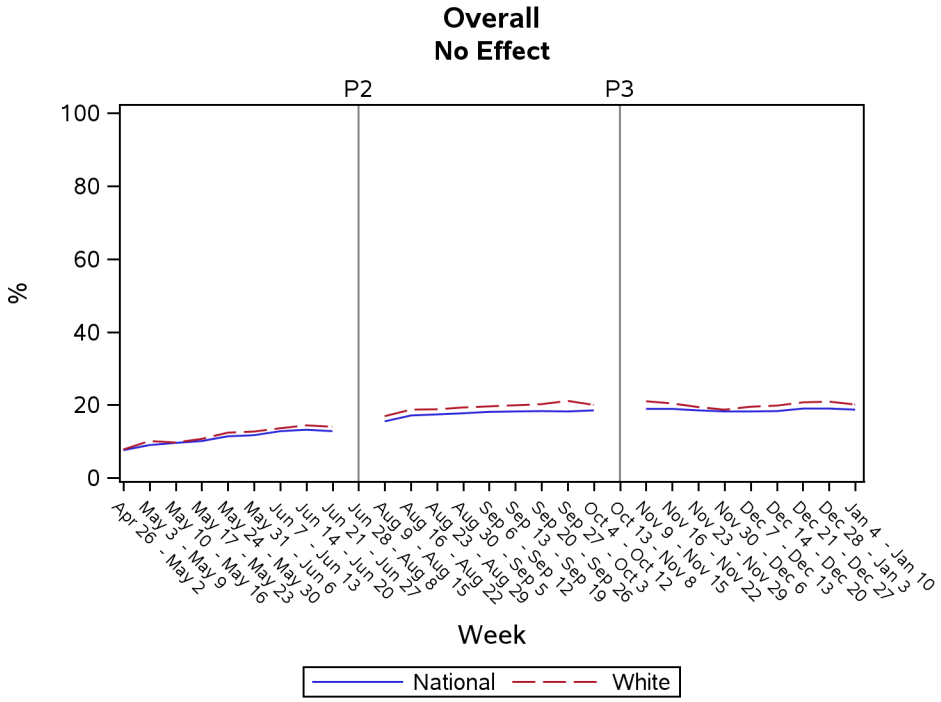
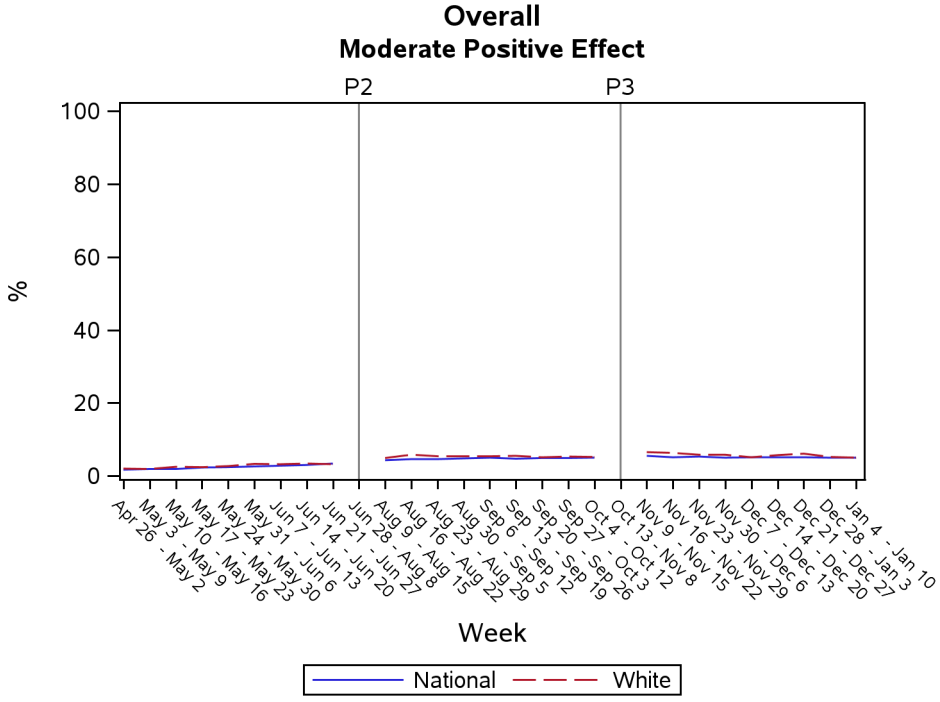
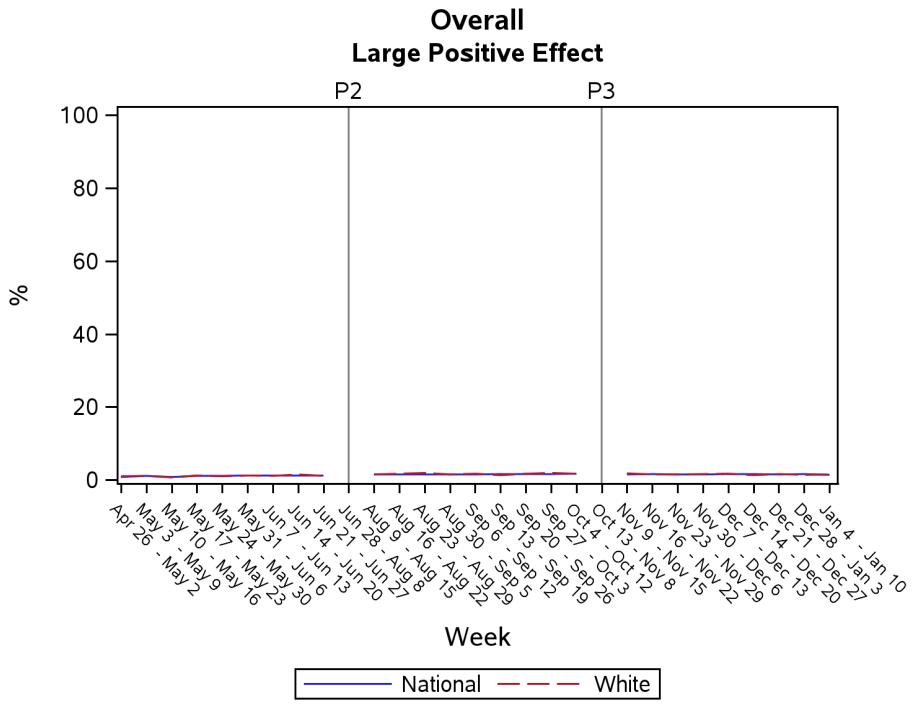
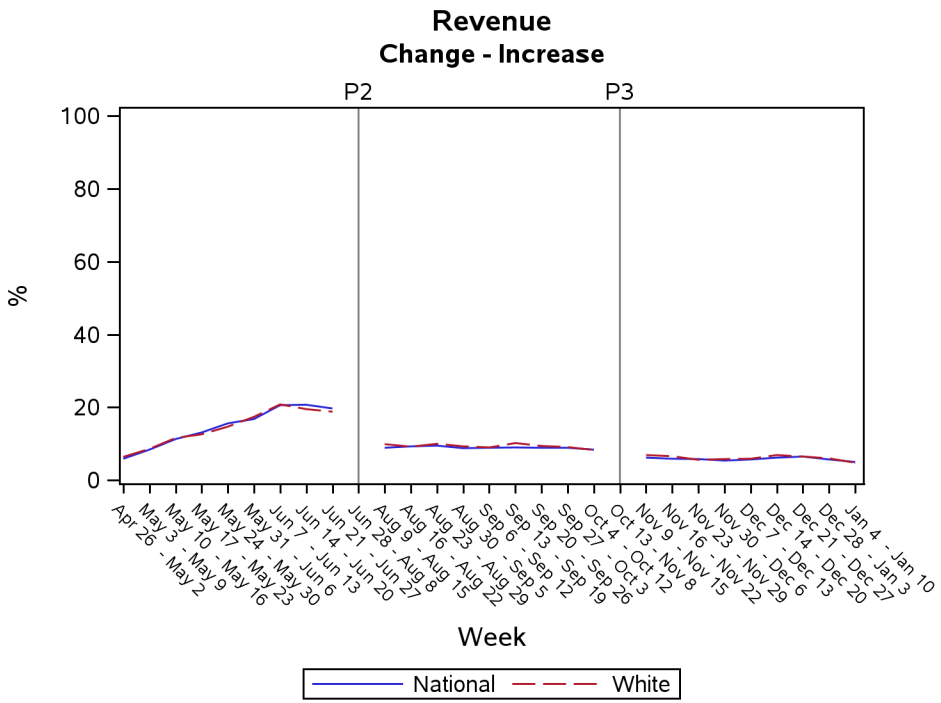

Overall
Large Negative Effect
P2
P3
100
80
60
40
20
0
%
Week
National
White

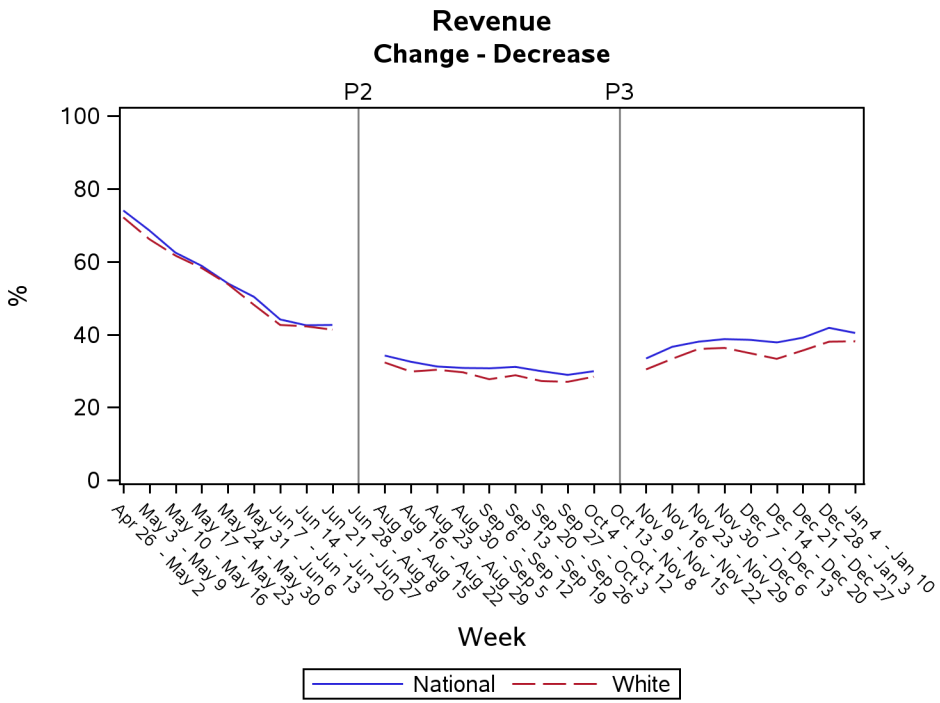

Overall
Moderate Negative Effect
P2
P3
100
80
60
40
20
0
%
Week
National
White

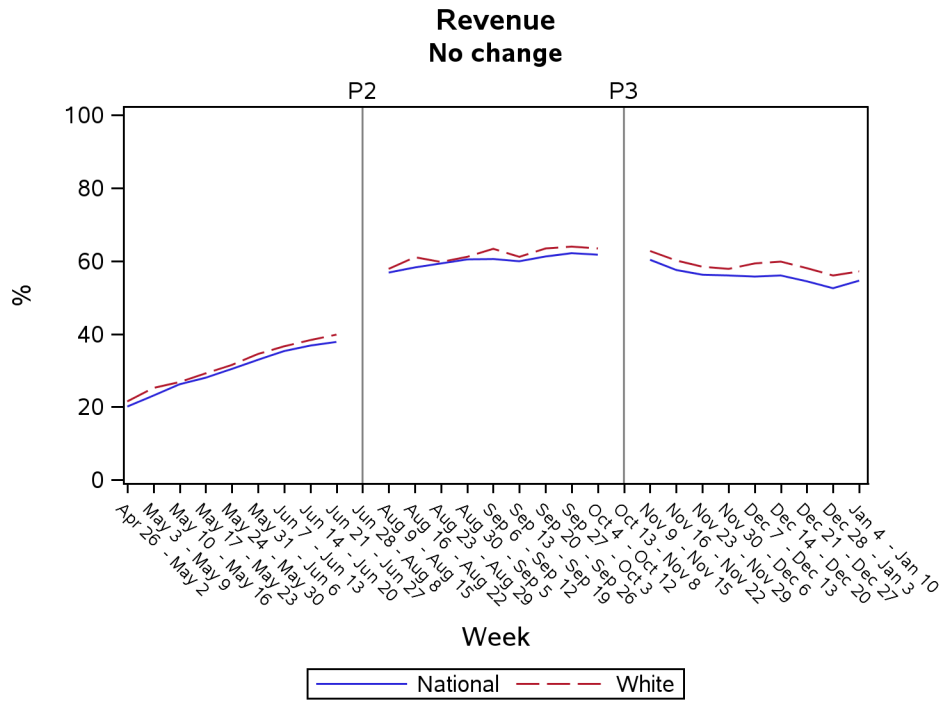

Overall
No Effect
P2
P3
100
80
60
40
20
0
%
Week
National
White

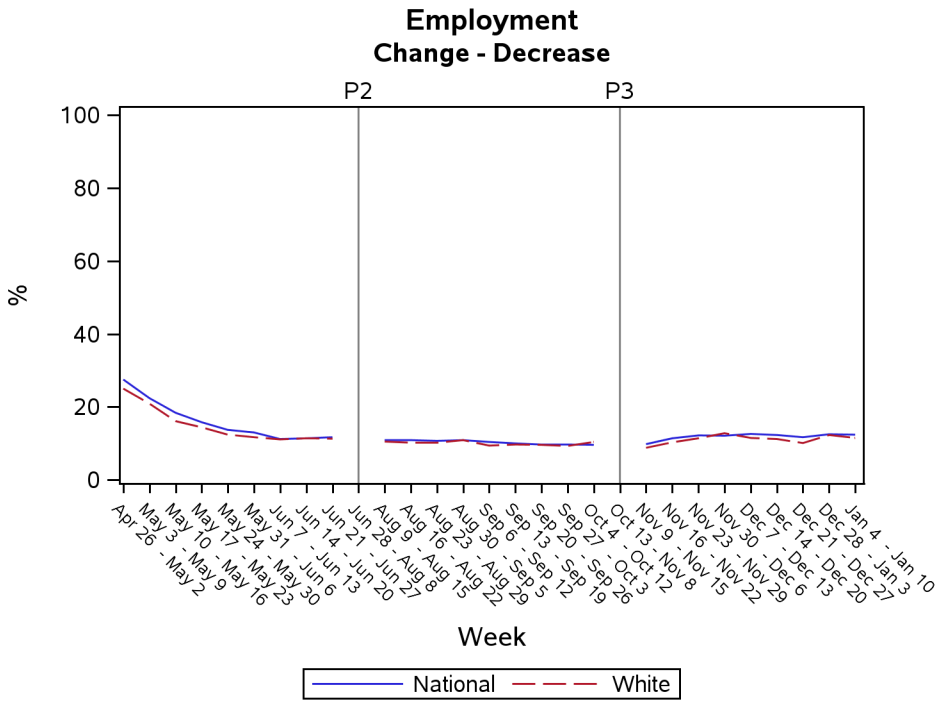

Overall
Moderate Positive Effect
P2
P3
100
80
60
40
20
0
%
Week
National
White

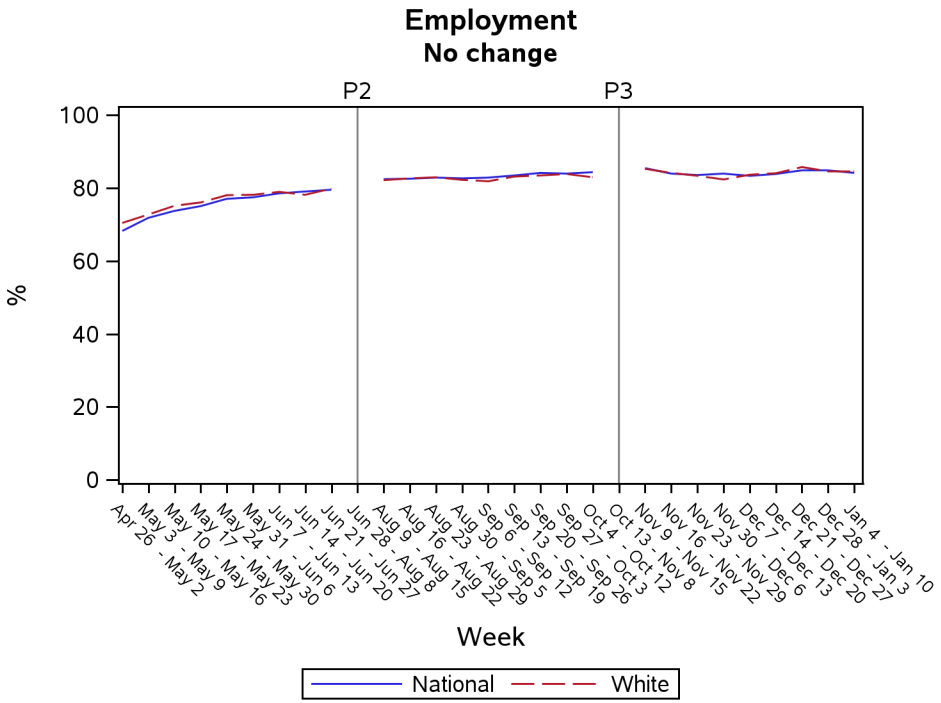

Overall
Large Positive Effect
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
White

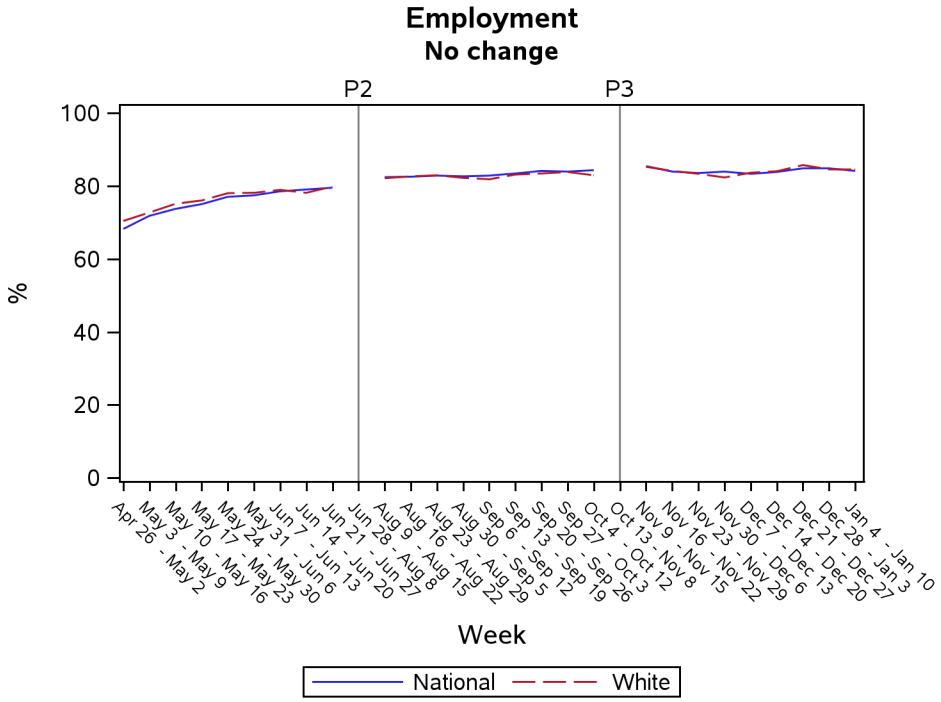

Revenue
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
White

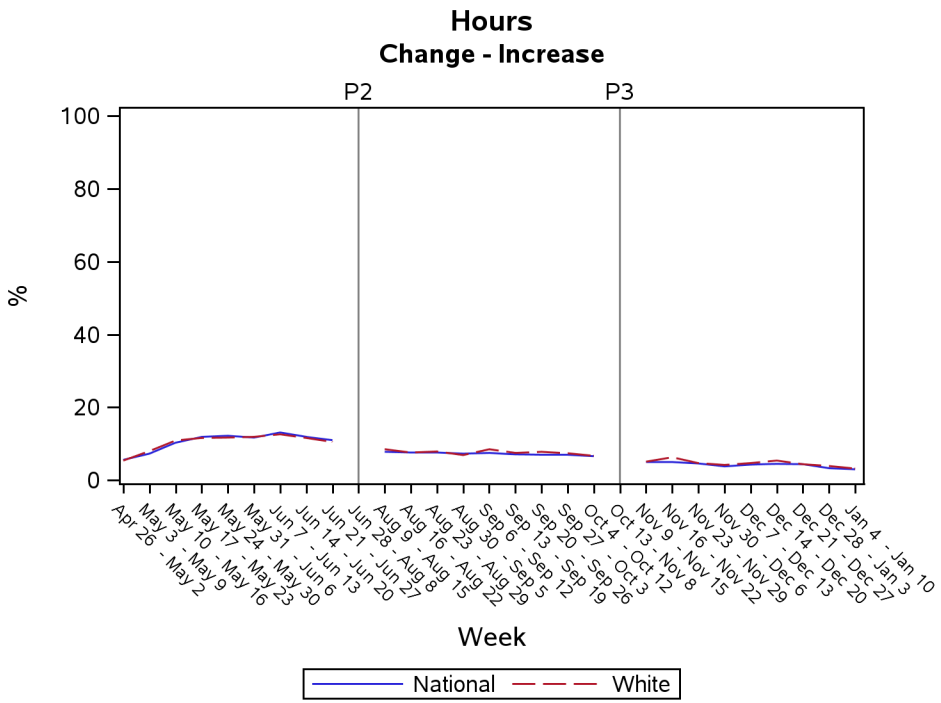

Revenue
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
White

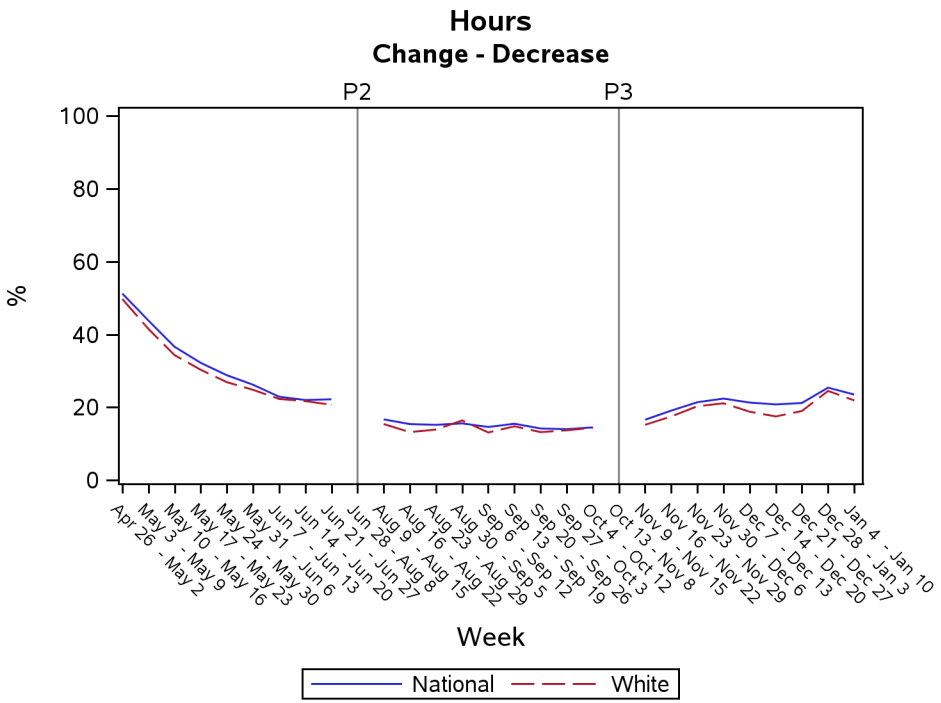

Revenue
No change
P2
P3
100
80
60
40
20
0
%
Week
National
White

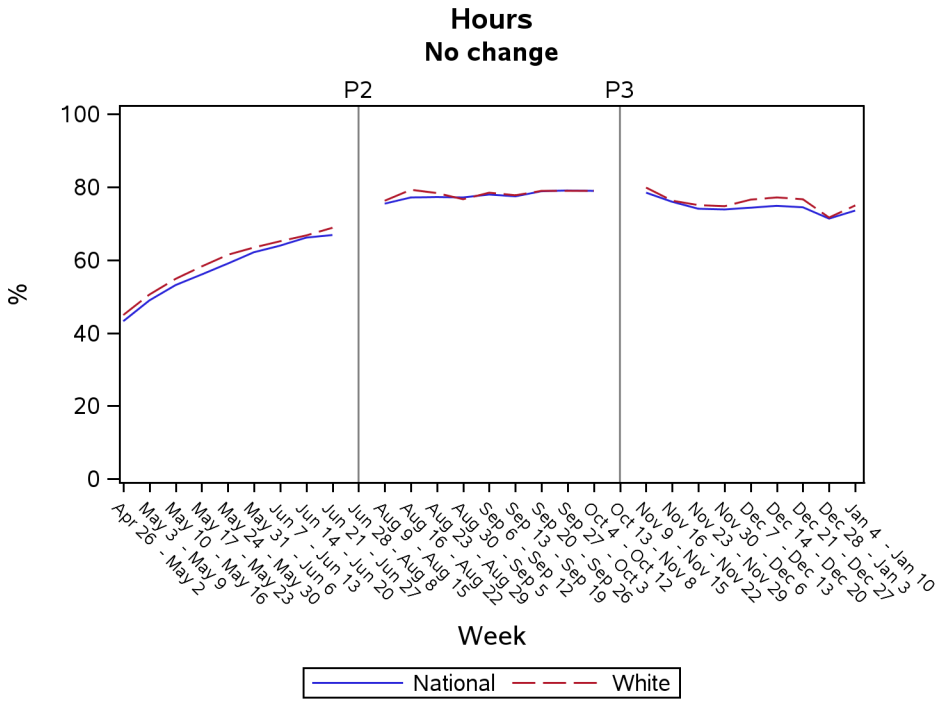

Employment
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
White

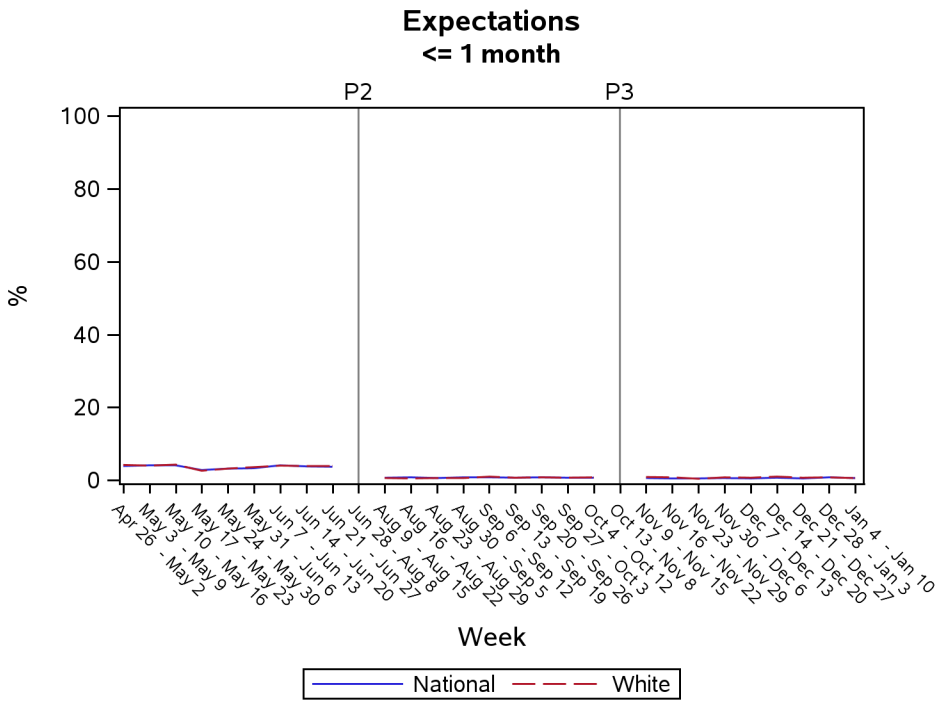

Employment
No change
P2
P3
100
80
60
40
20
0
%
Week
National
White

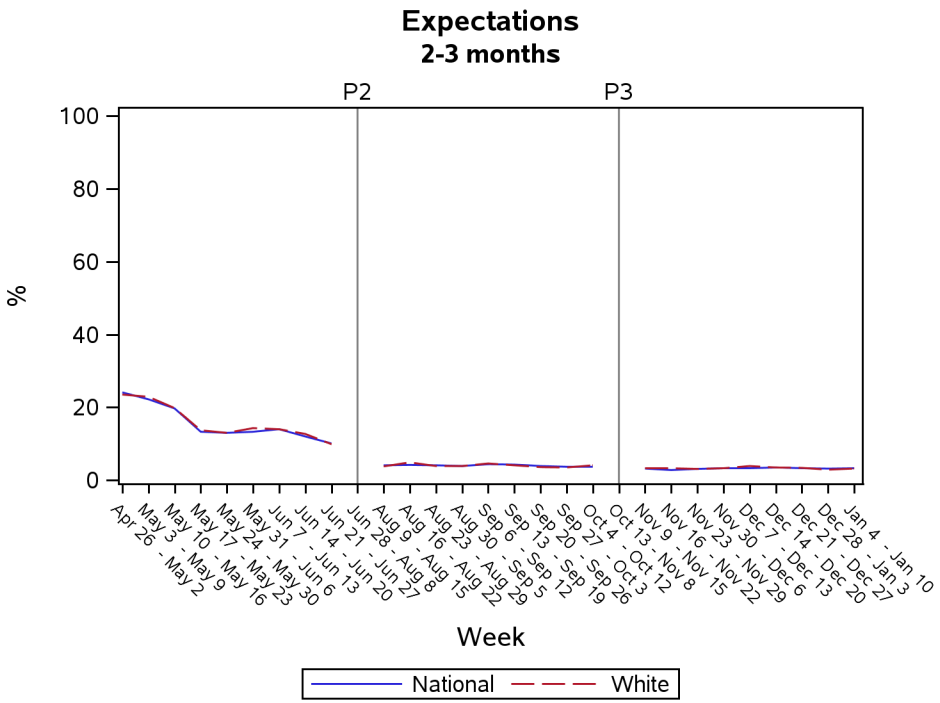

Employment
No change
P2
P3
100
80
60
40
20
0
%
Week
National
White

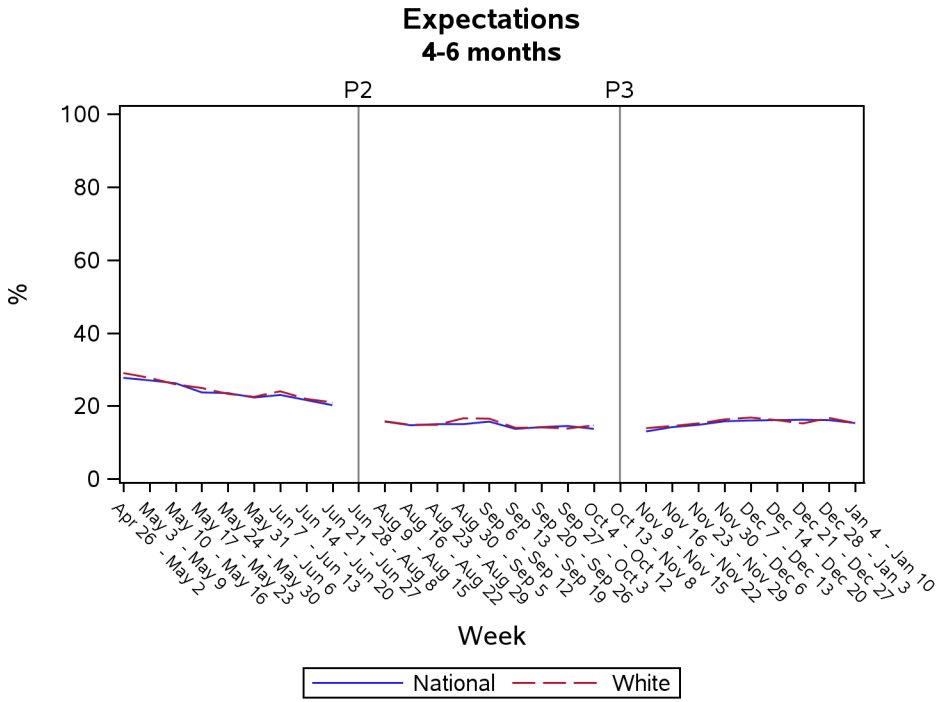

Hours
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
White

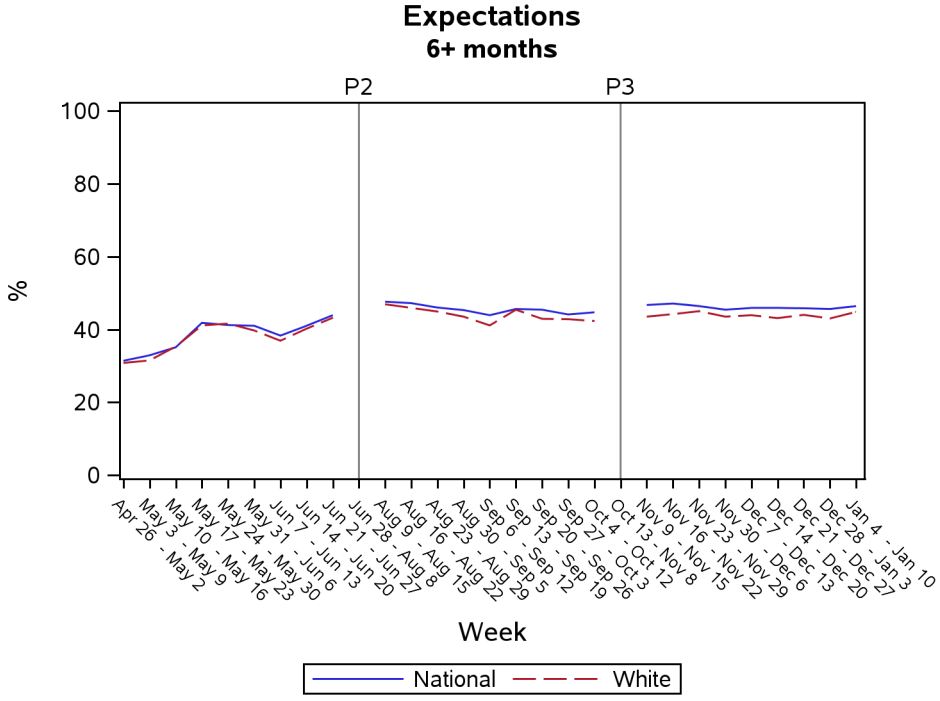

Hours
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
White

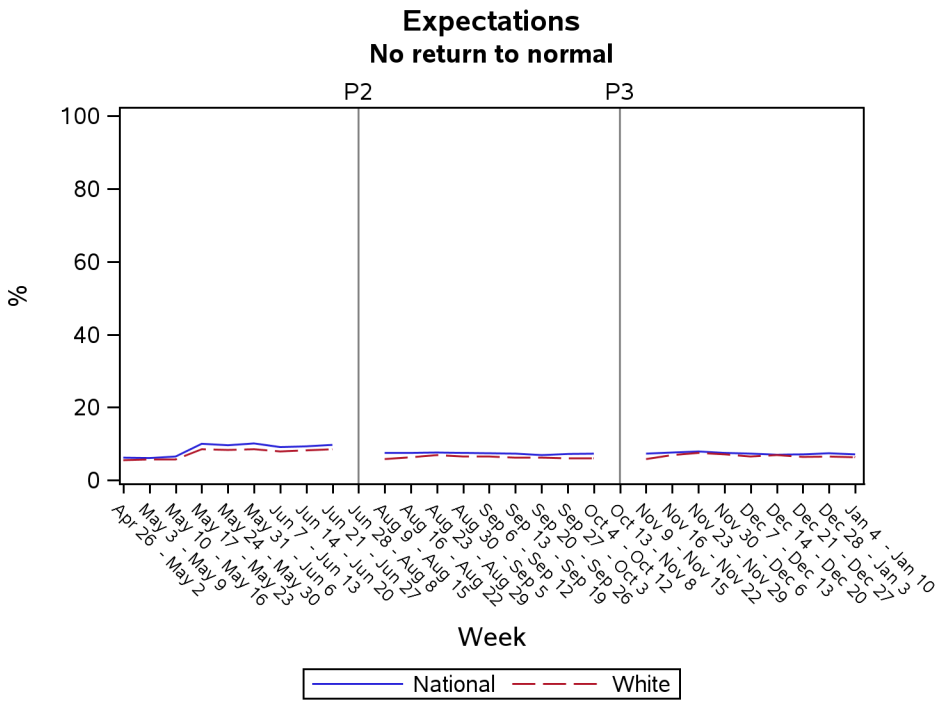

Hours
No change
P2
P3
100
80
60
40
20
0
%
Week
National
White

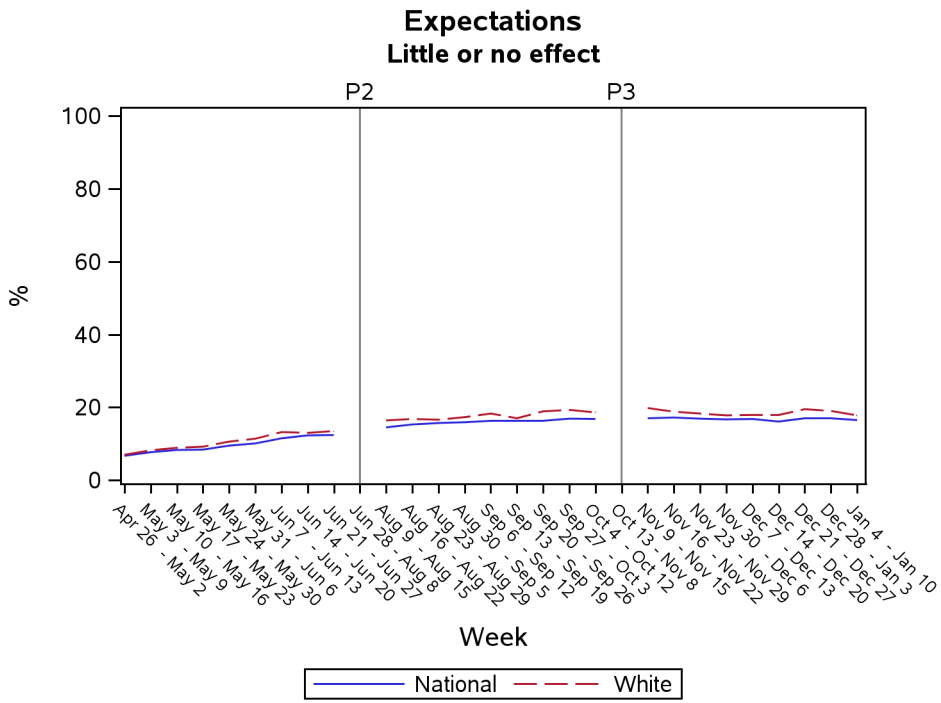

Expectations
<= 1 month
P2
P3
100
80
60
40
20
0
%
Week
National
White

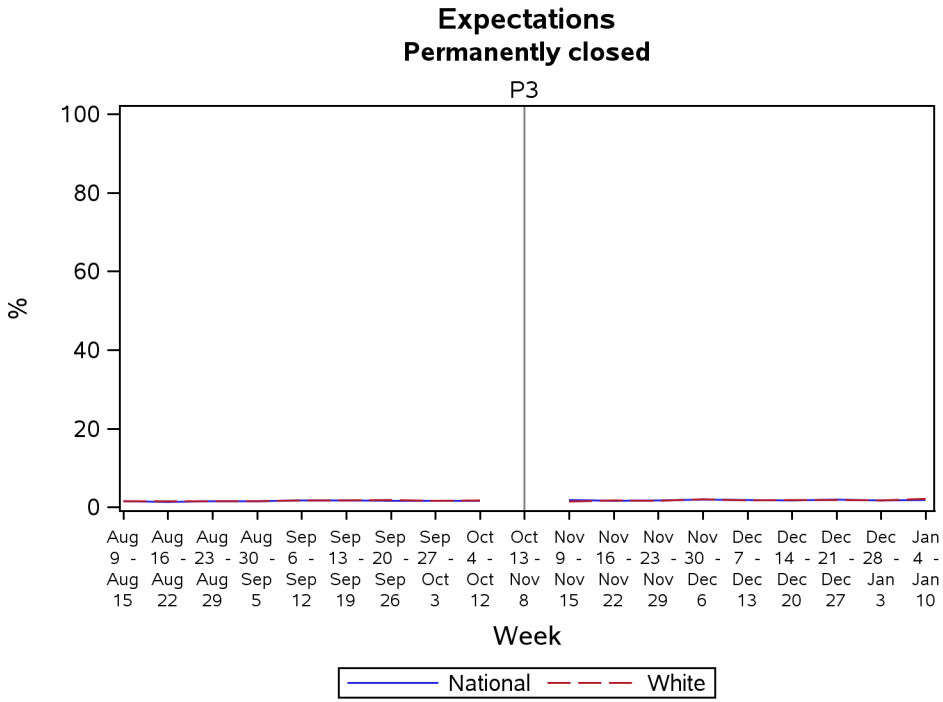

Expectations
2-3 months
P2
P3
100
80
60
40
20
0
%
Week
National
White

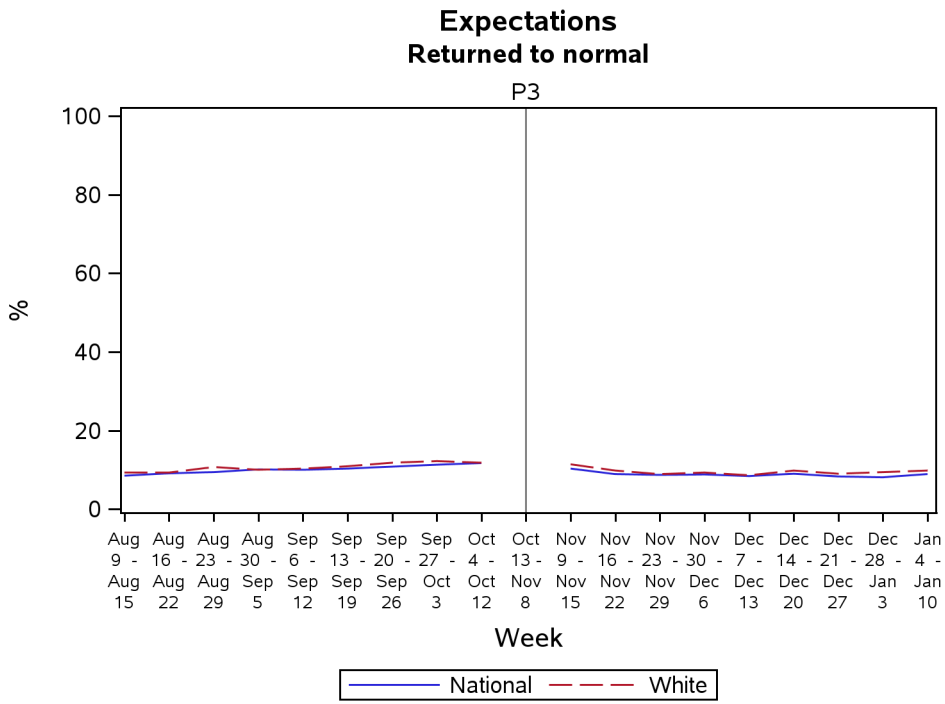

Expectations
4-6 months
P2
P3
100
80
60
40
20
0
%
Week
National
White


Expectations
6+ months
P2
P3
100
80
60
40
20
0
%
Week
National
White


Expectations
No return to normal
P2
P3
100
80
60
40
20
0
%
Week
National
White


Expectations
Little or no effect
P2
P3
100
80
60
40
20
0
%
Week
National
White


Expectations
Permanently closed
P3
100
80
60
40
20
0
%
Week
National
White


Expectations
Returned to normal
P3
100
80
60
40
20
0
%
Week
National
White

Appendix B. Owner Characteristics Published Estimates (Ethnicity)

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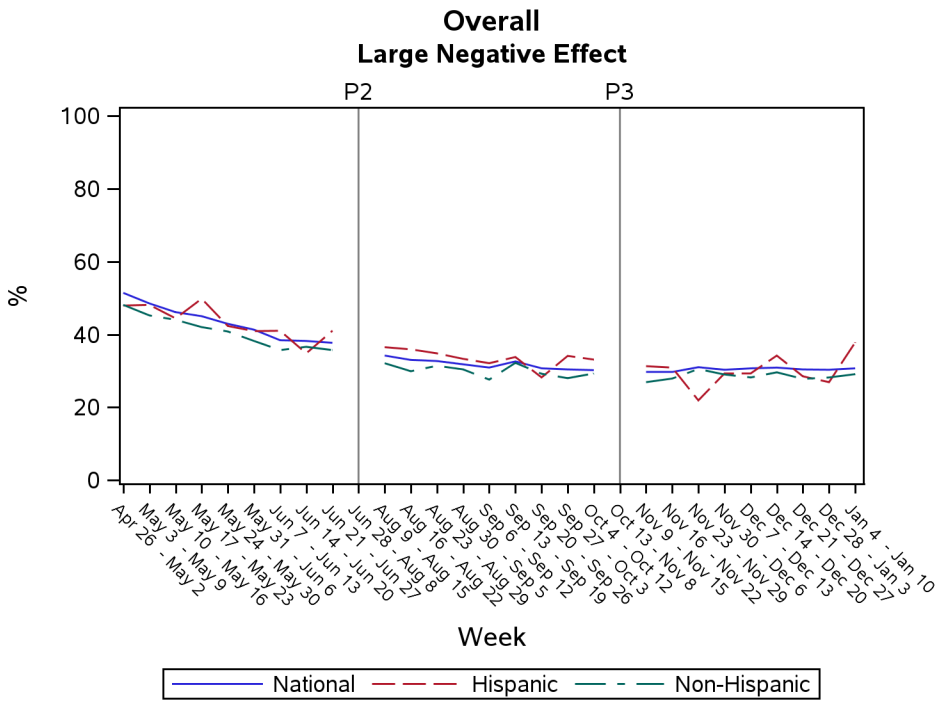
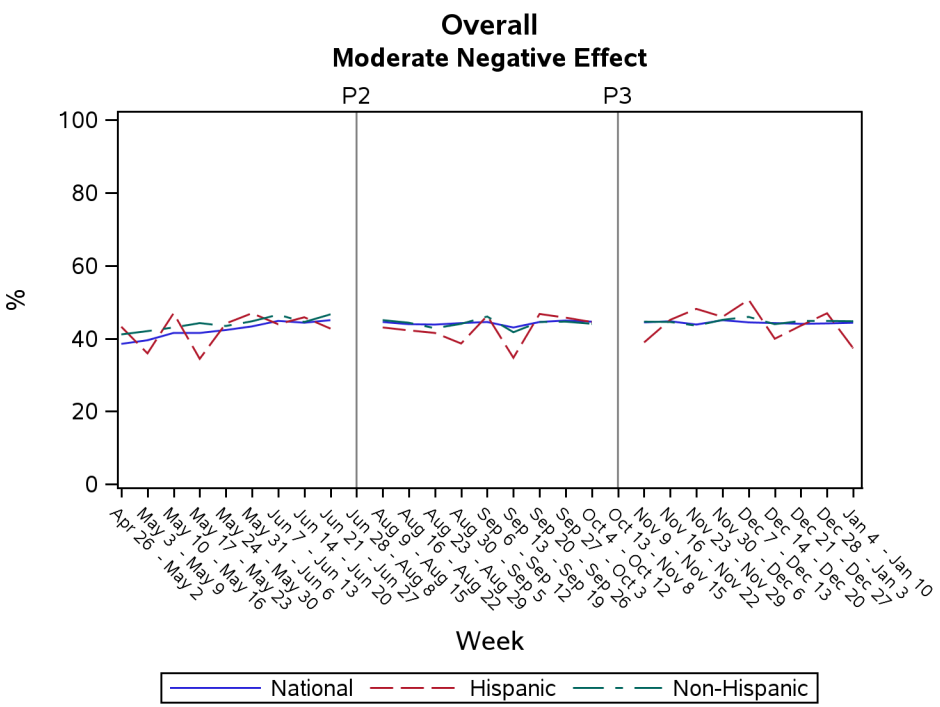
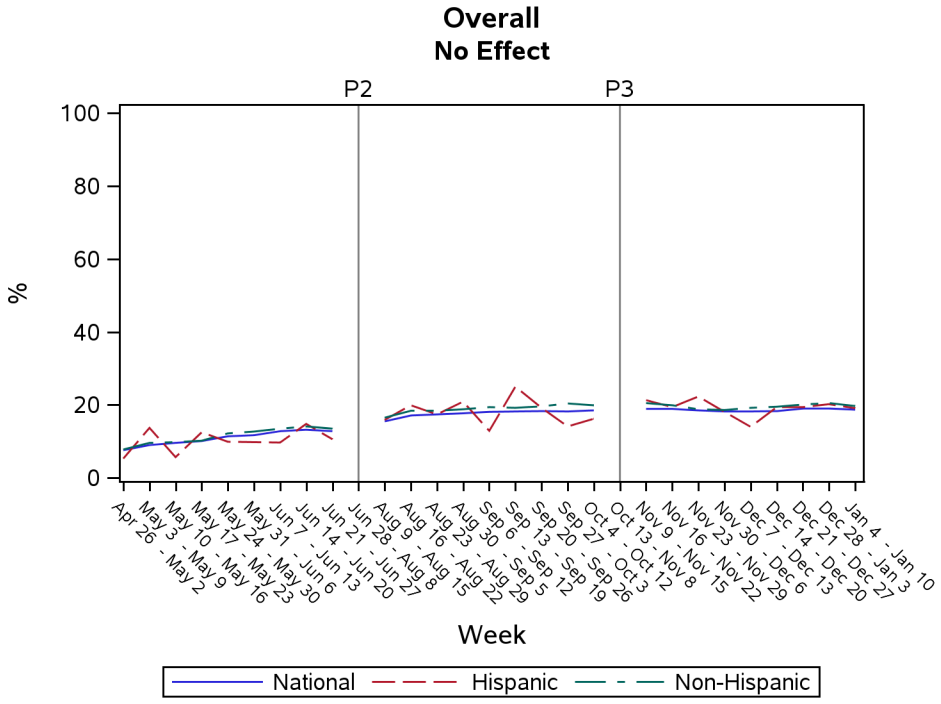
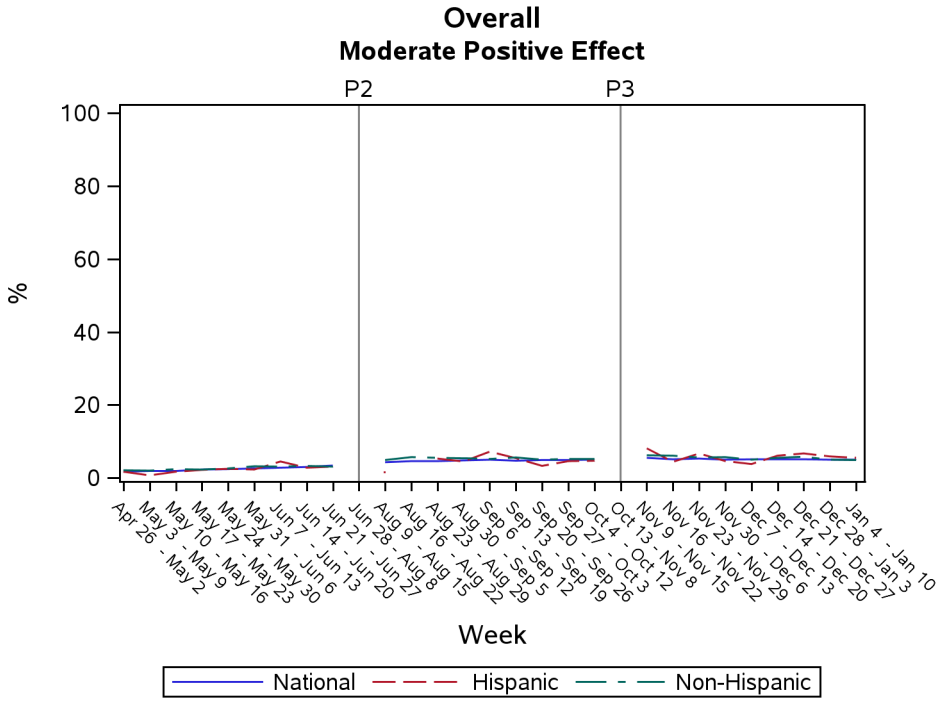
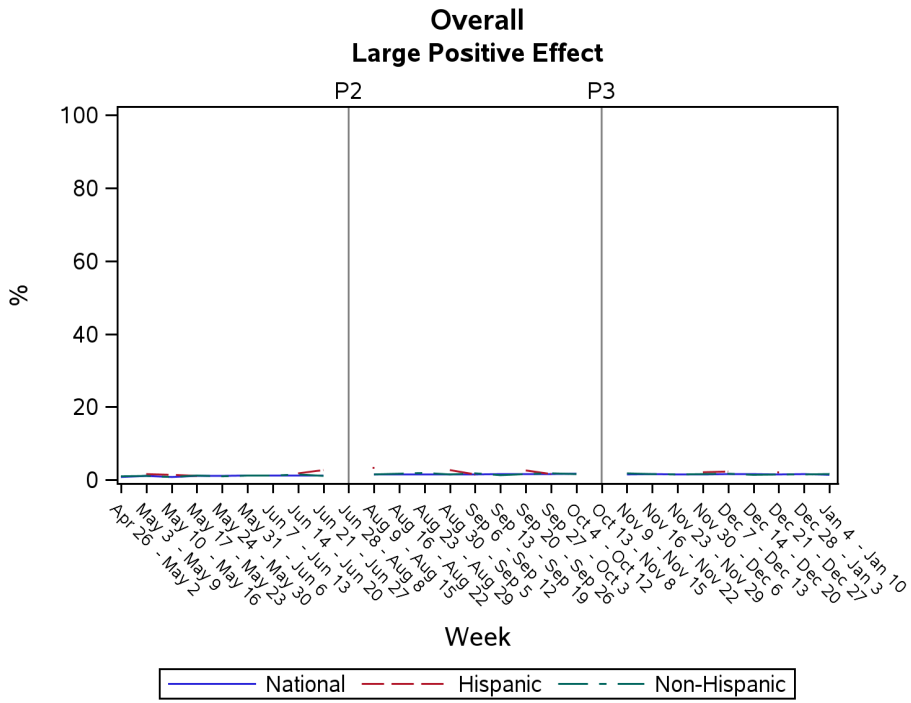
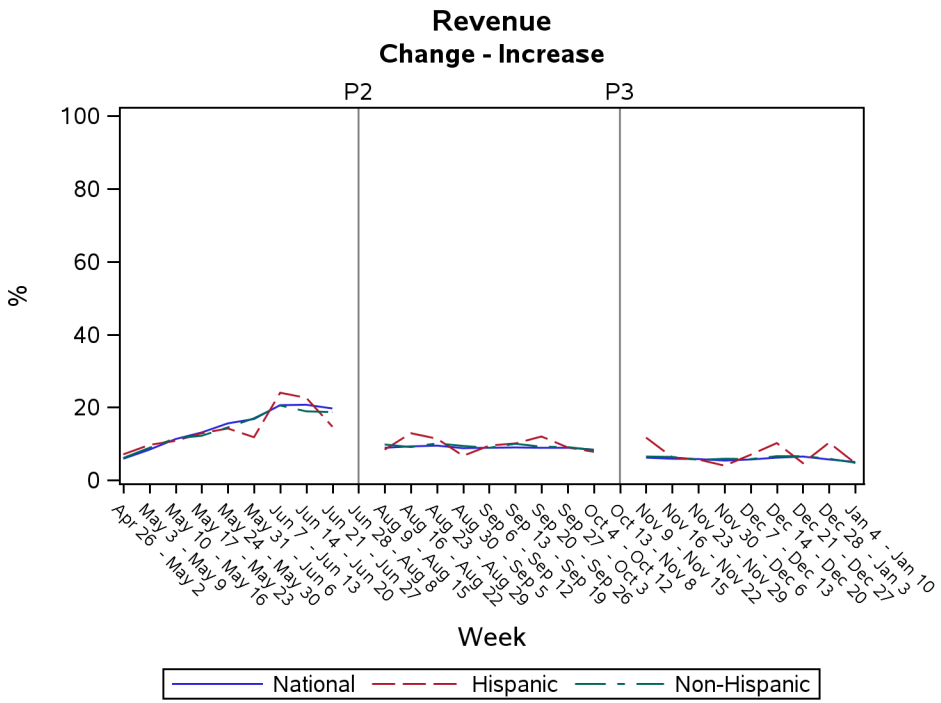

Overall
Large Negative Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic

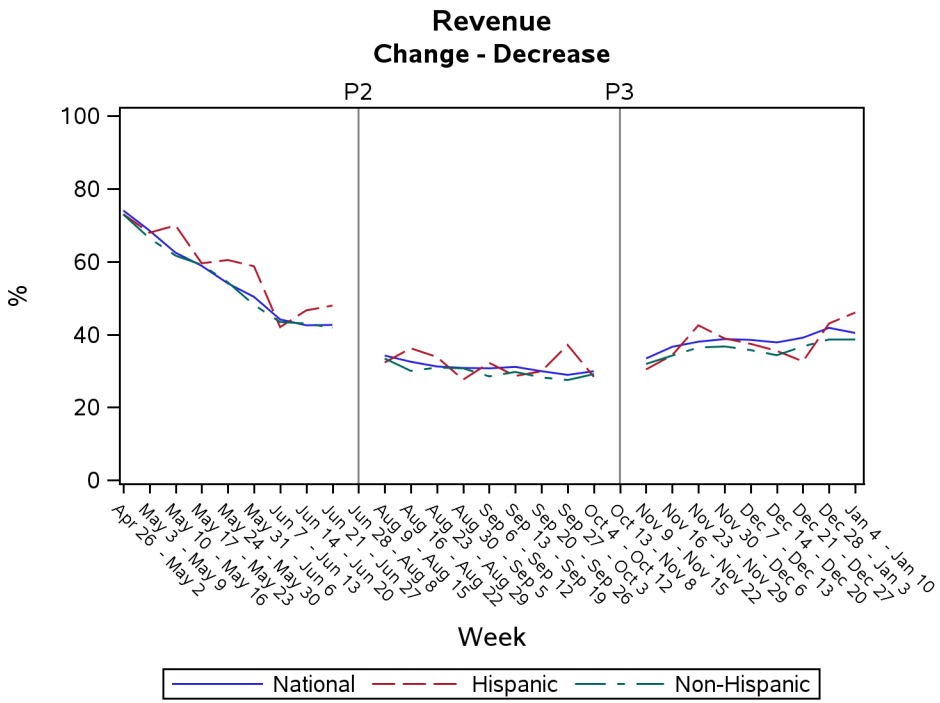

Overall
Moderate Negative Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic

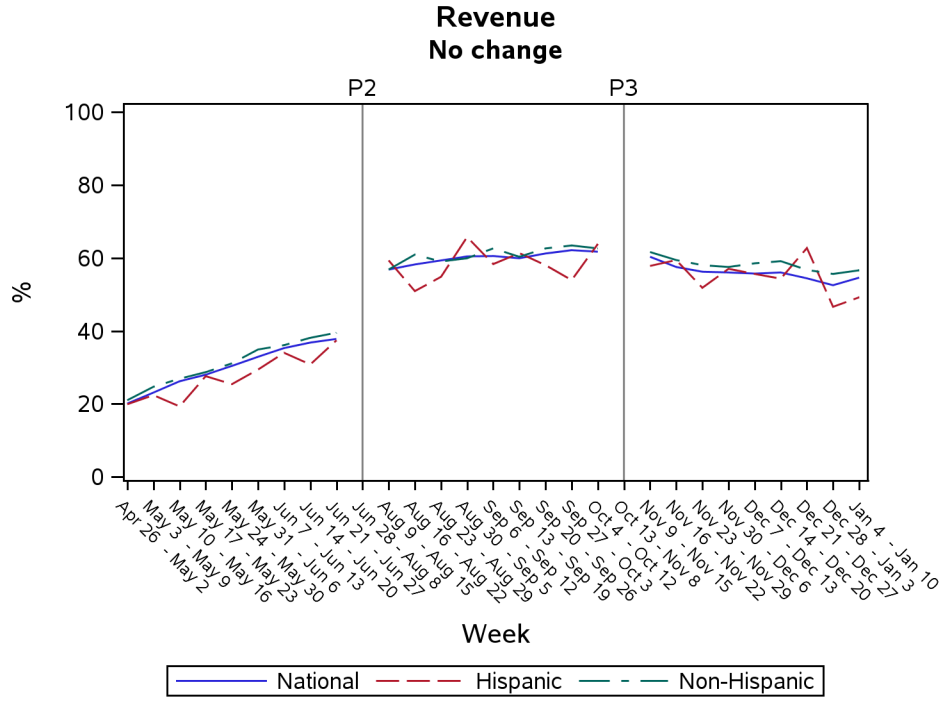

Overall
No Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic

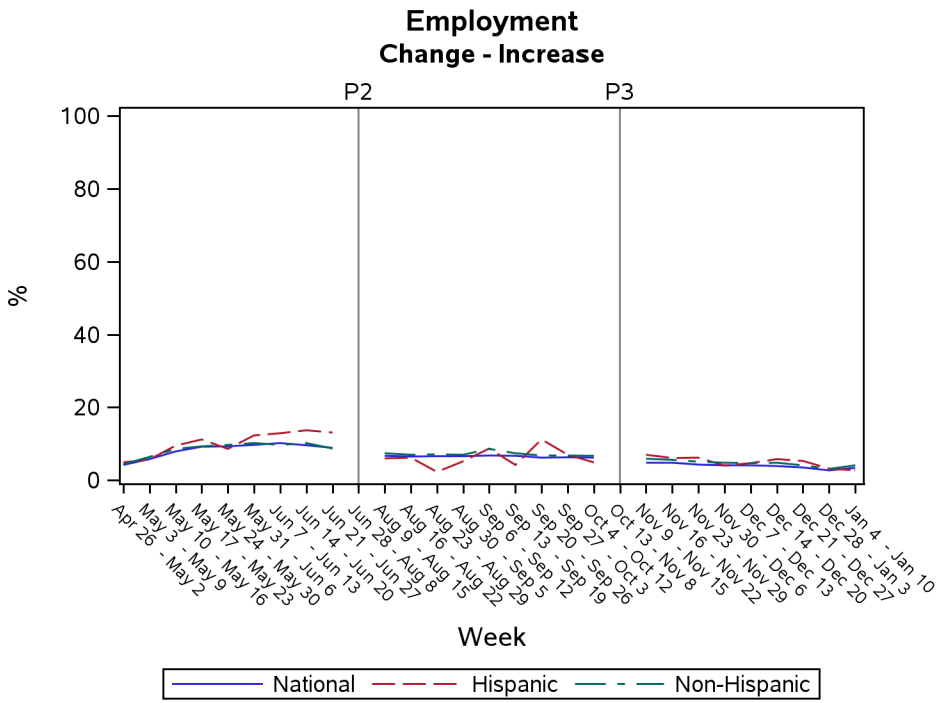

Overall
Moderate Positive Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic

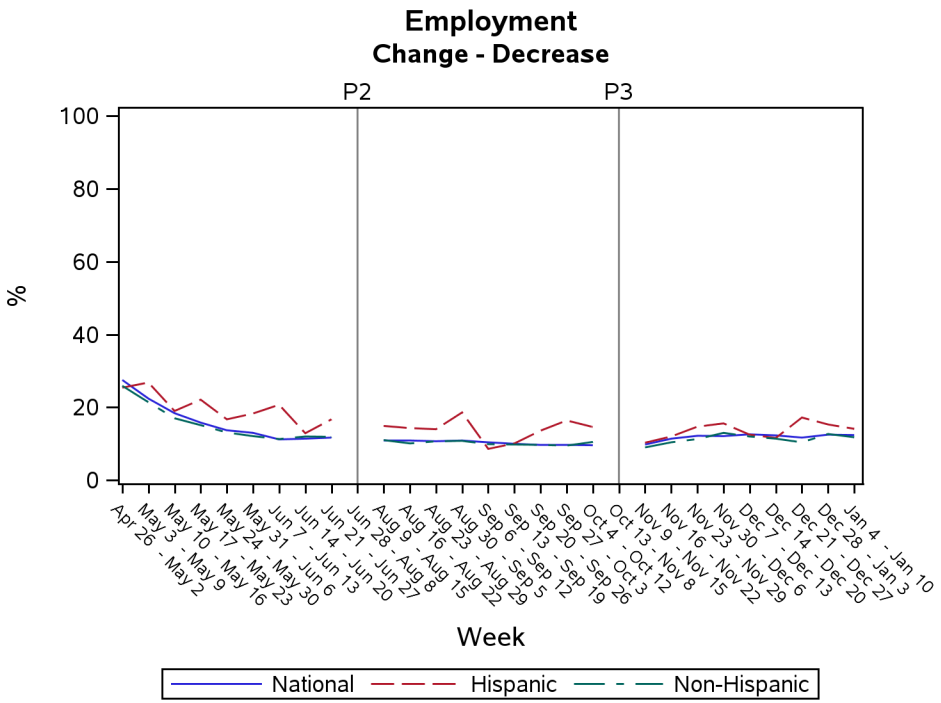

Overall
Large Positive Effect
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Hispanic
Non-Hispanic

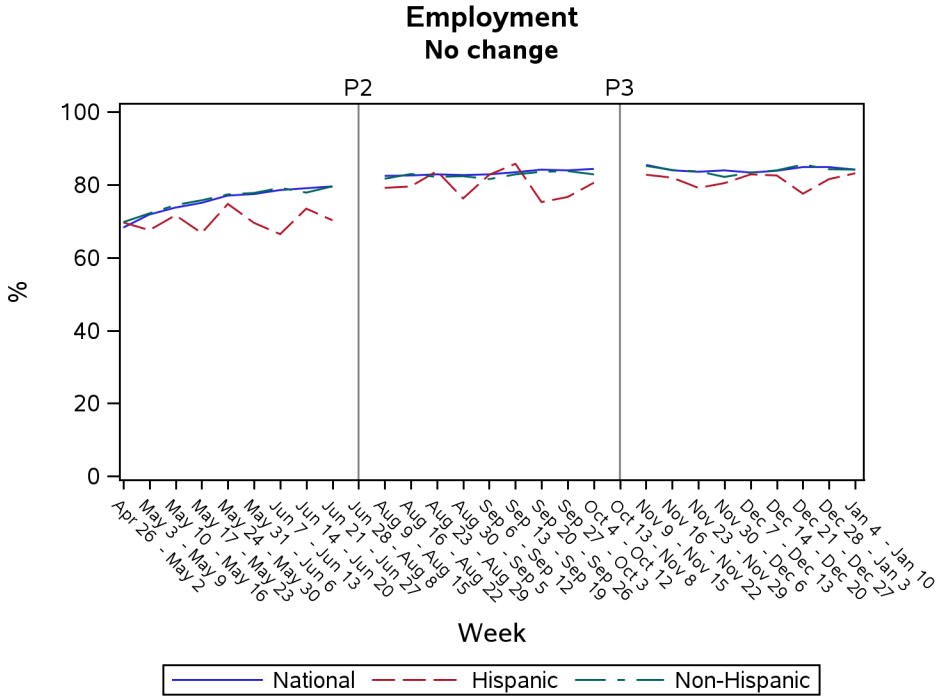

Revenue
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic

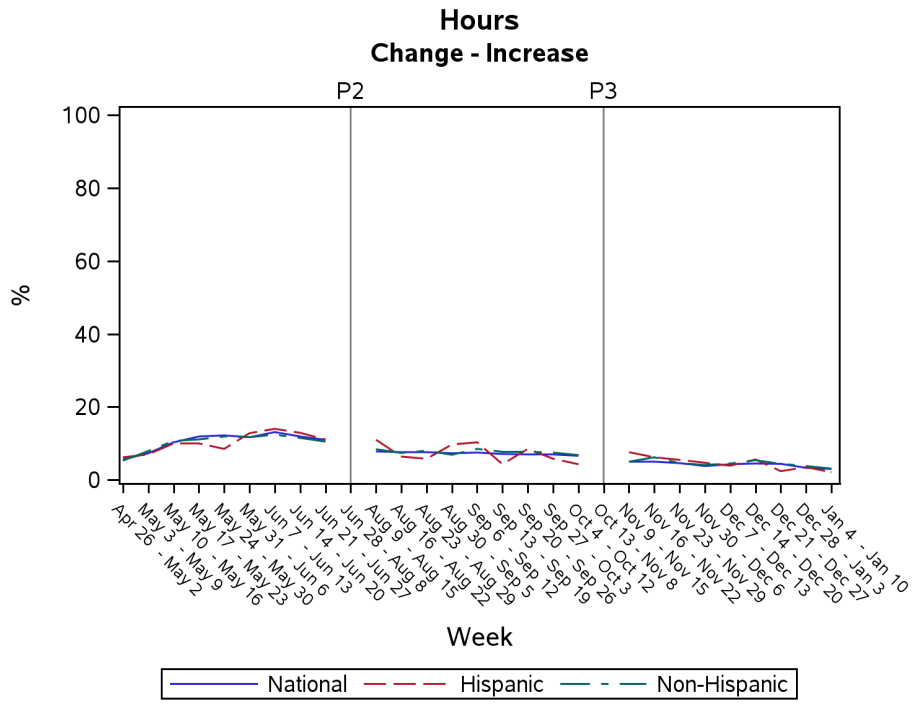

Revenue
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic

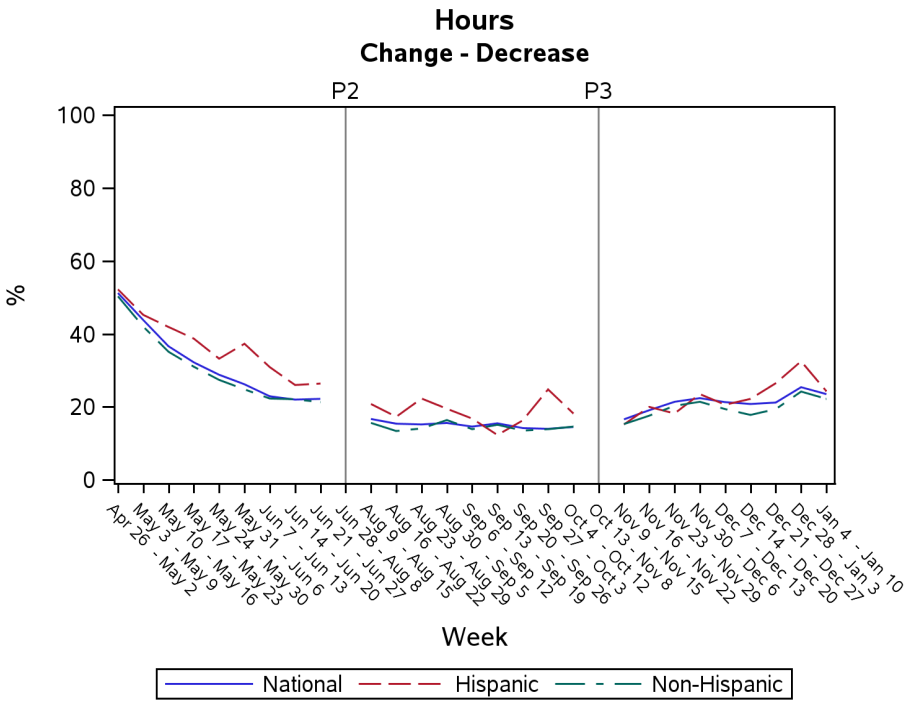

Revenue
No change
P2
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic

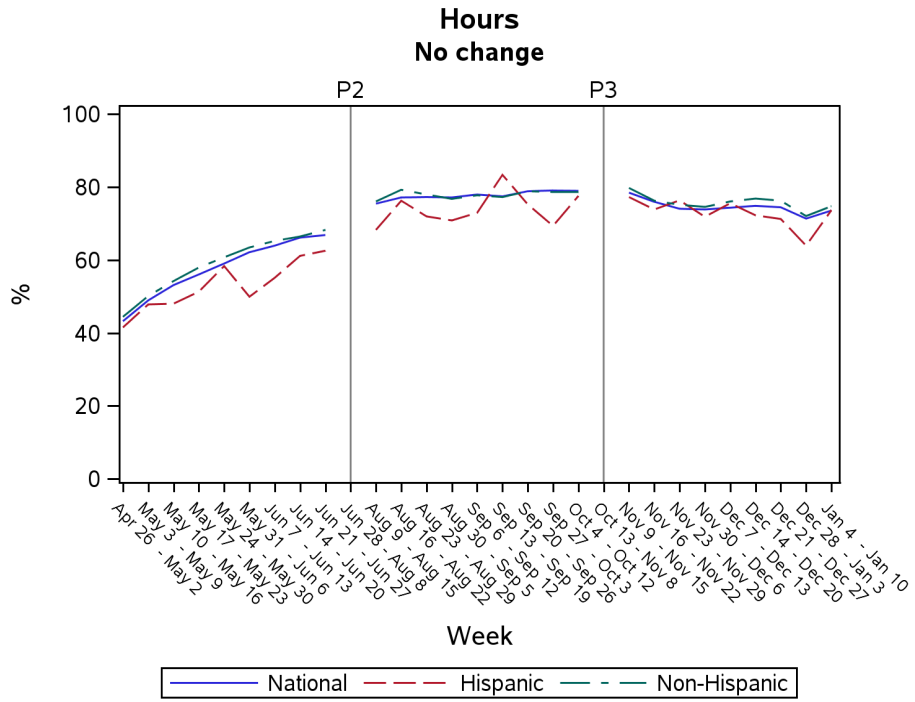

Employment
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic

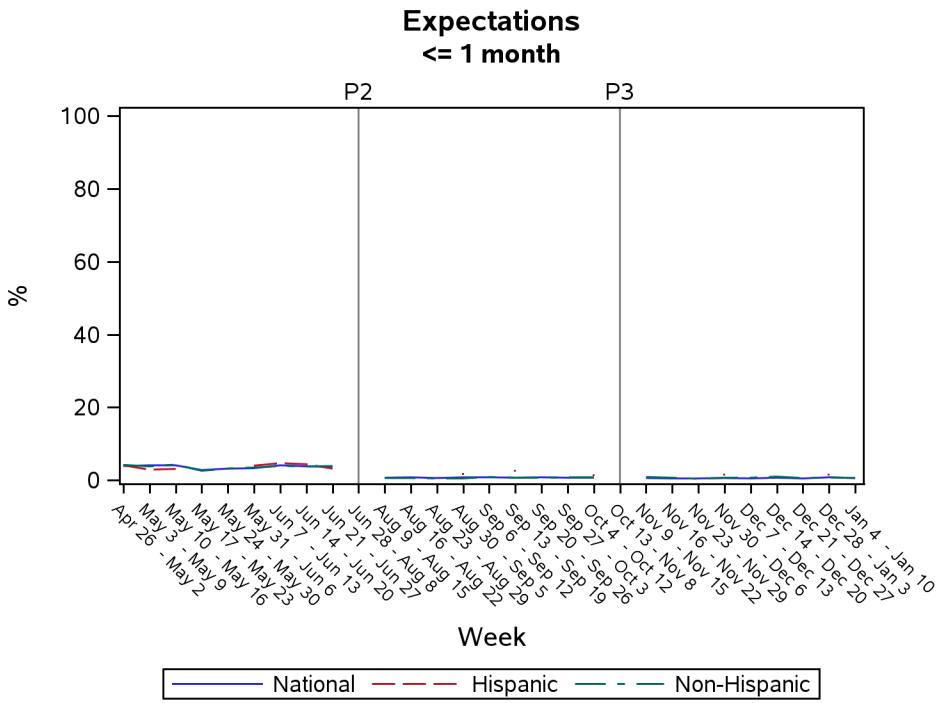

Employment
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic

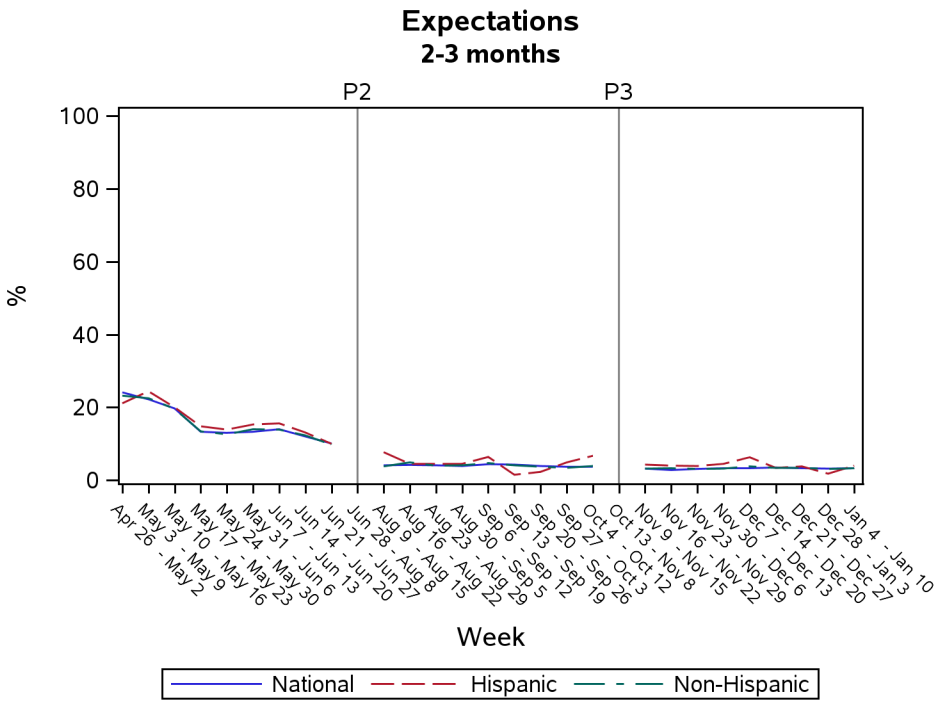

Employment
No change
P2
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic

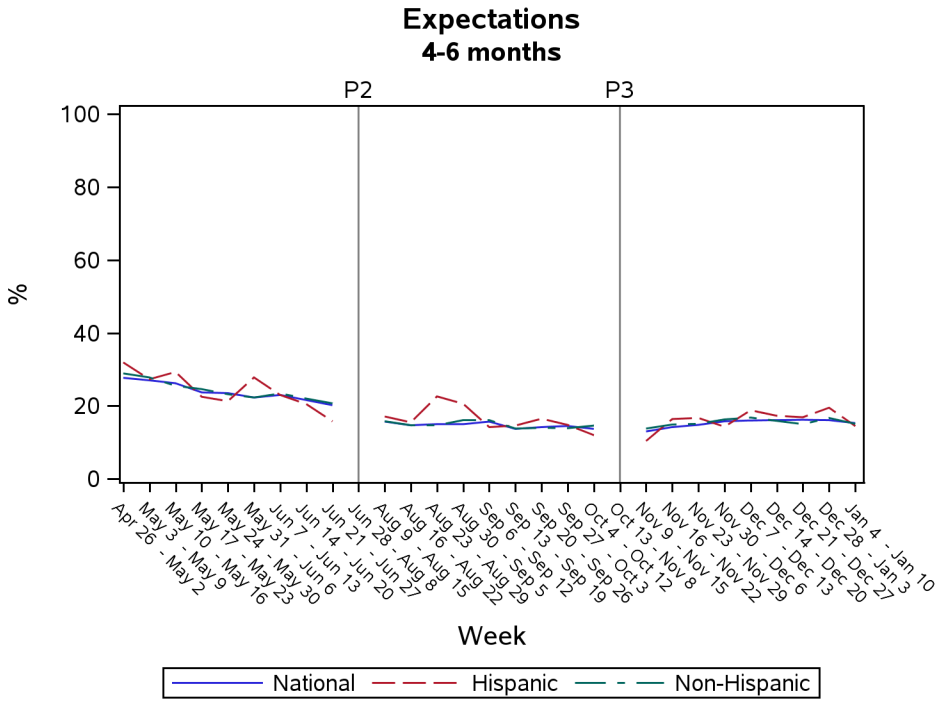

Hours
Change - Increase
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Hispanic
Non-Hispanic

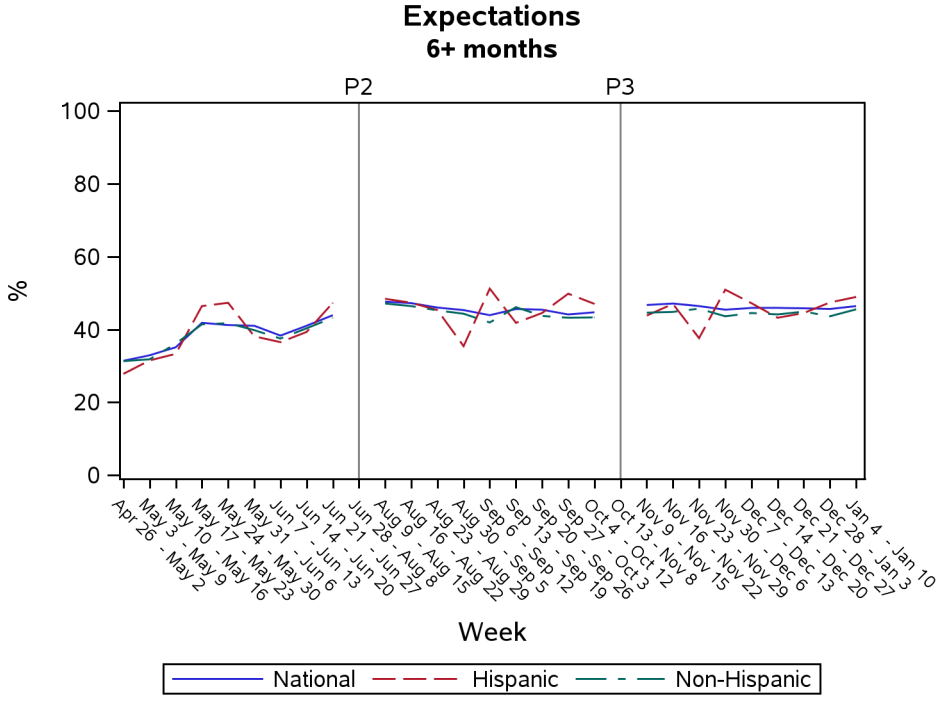

Hours
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Hispanic
Non-Hispanic

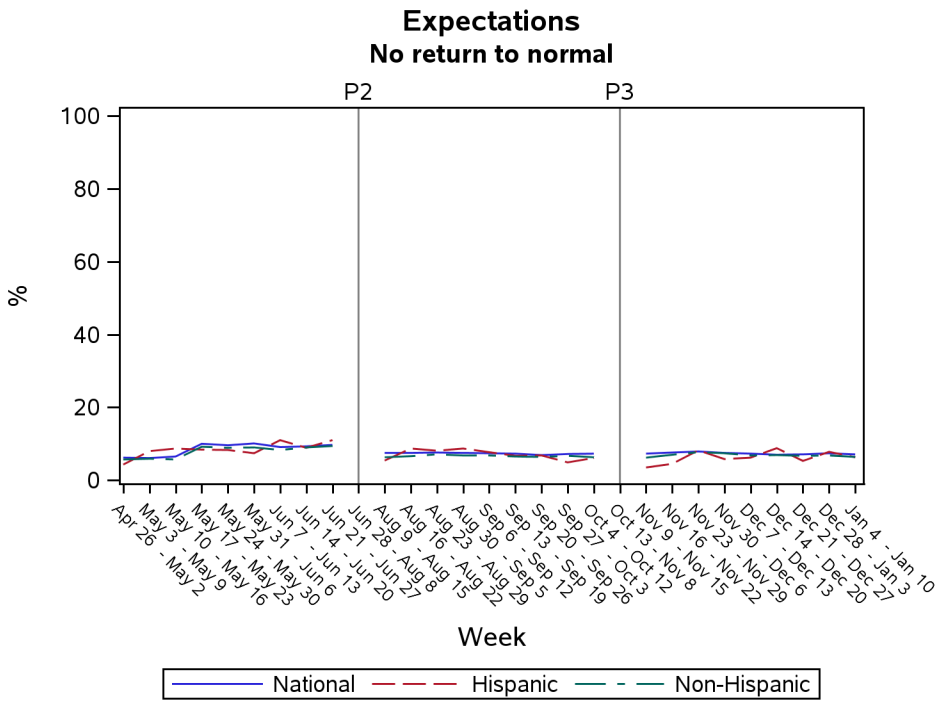

Hours
No change
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Hispanic
Non-Hispanic

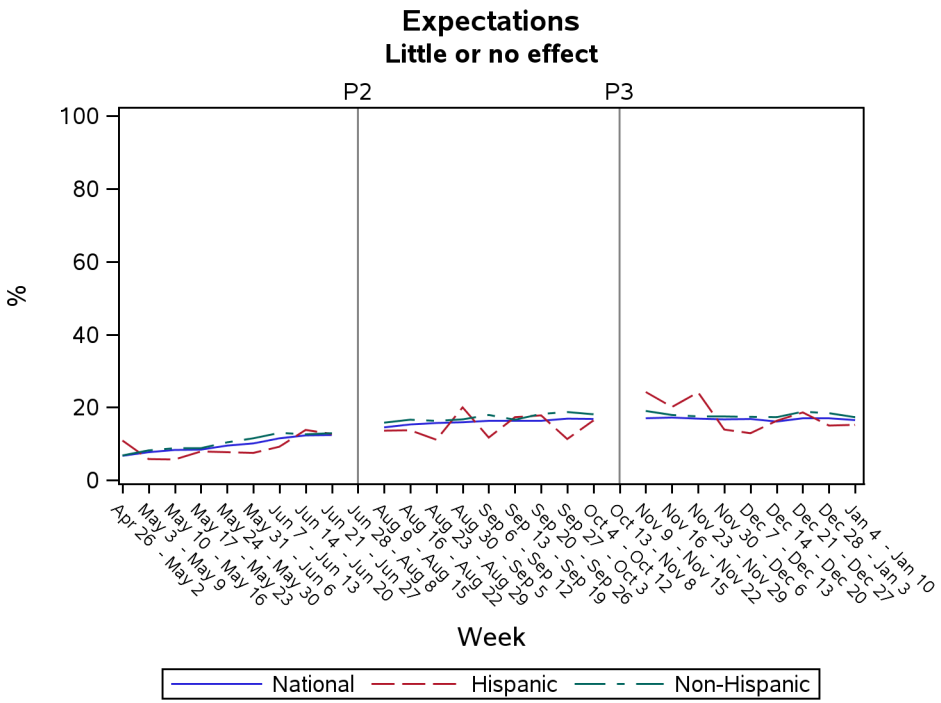

Expectations
<= 1 month
P2
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic

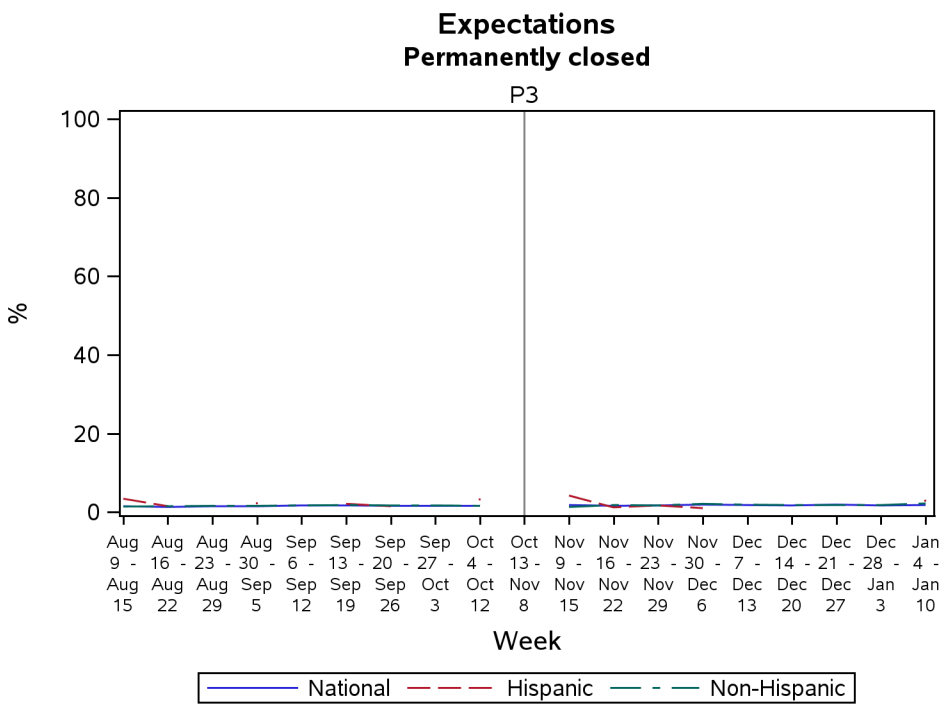

Expectations
2-3 months
P2
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic

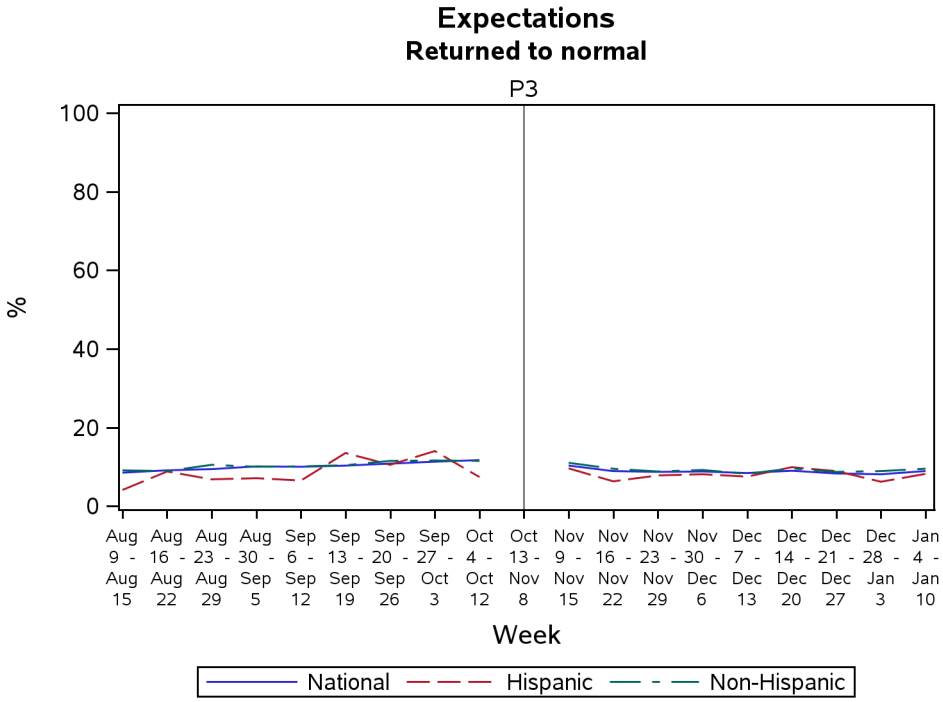

Expectations
4-6 months
P2
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic


Expectations
6+ months
P2
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic


Expectations
No return to normal
P2
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic


Expectations
Little or no effect
P2
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic


Expectations
Permanently closed
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic


Expectations
Returned to normal
P3
100
80
60
40
20
0
%
Week
National
Hispanic
Non-Hispanic

Appendix B. Owner Characteristics Published Estimates (Veteran status)

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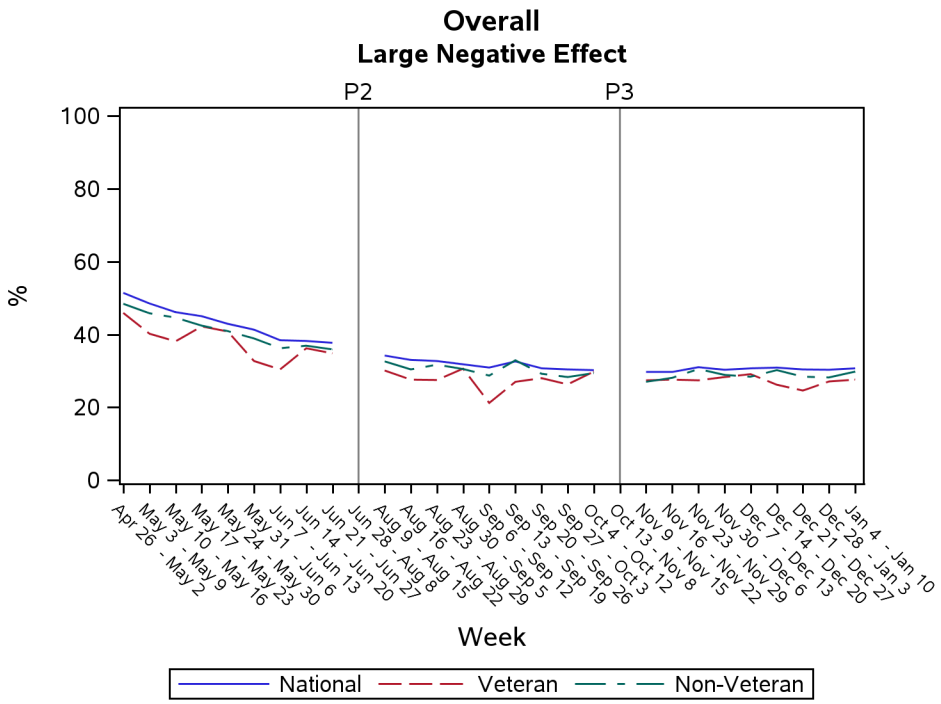
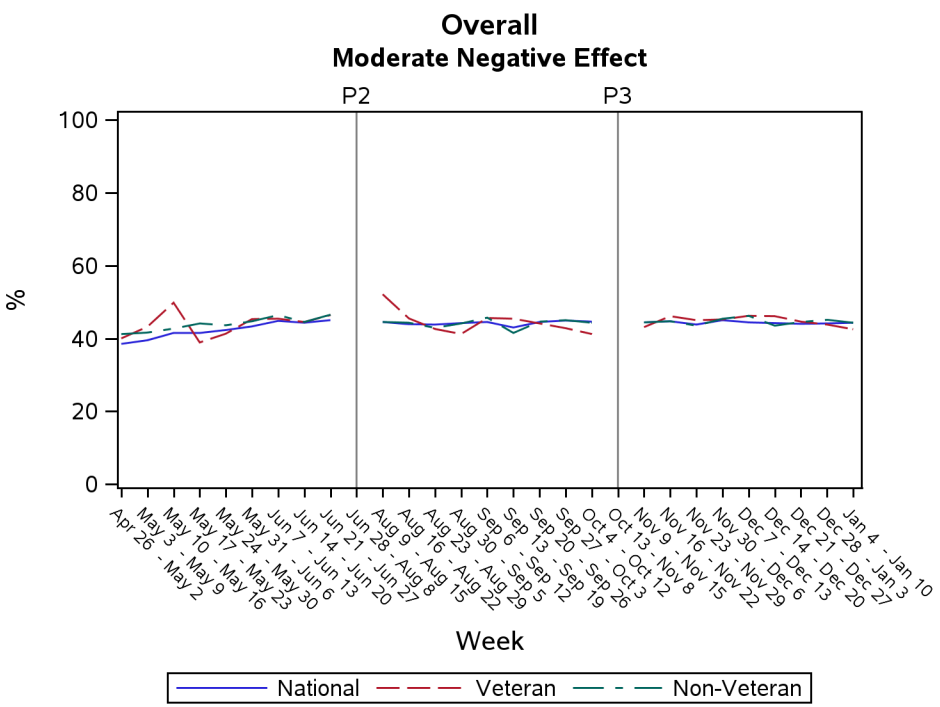
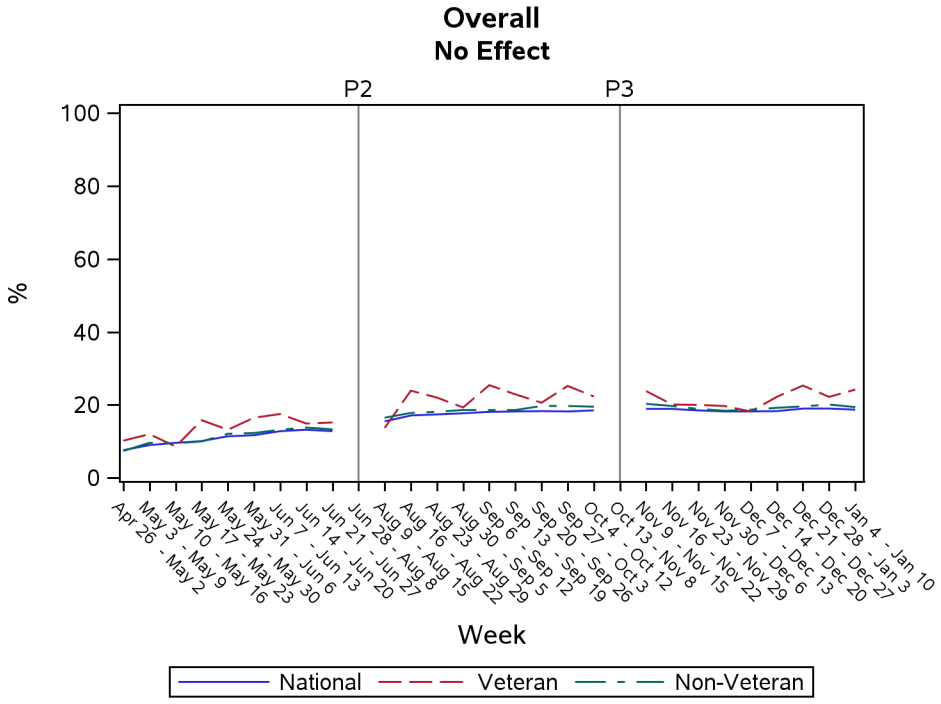
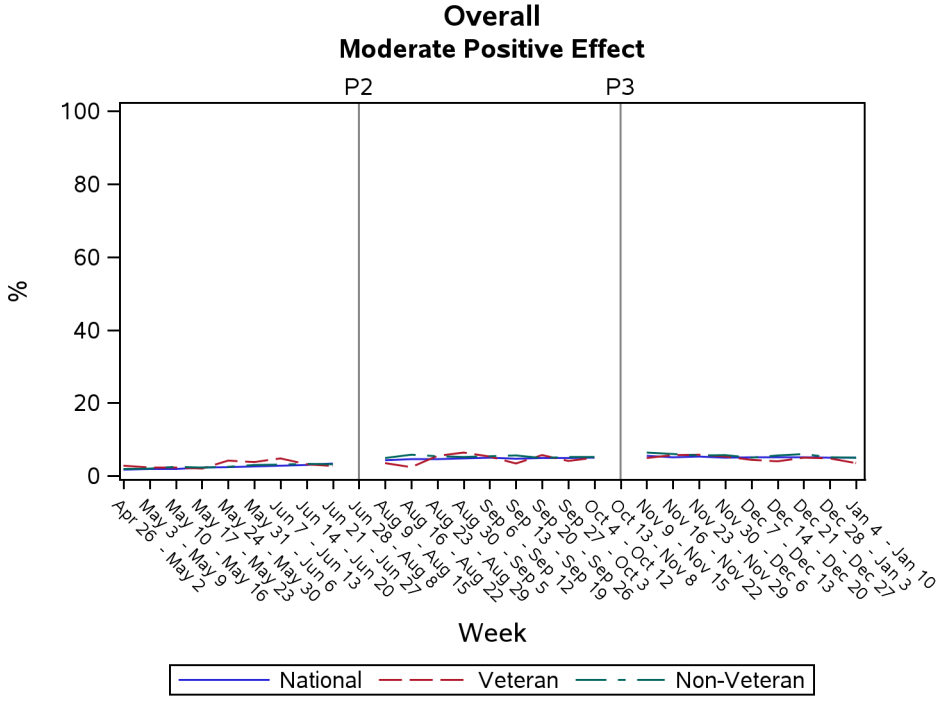
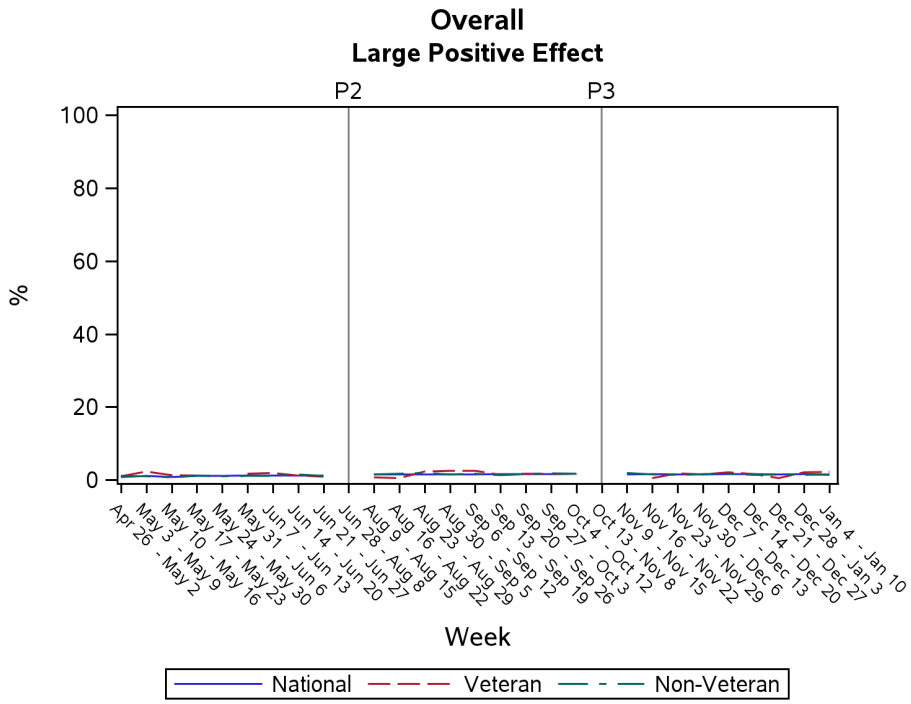
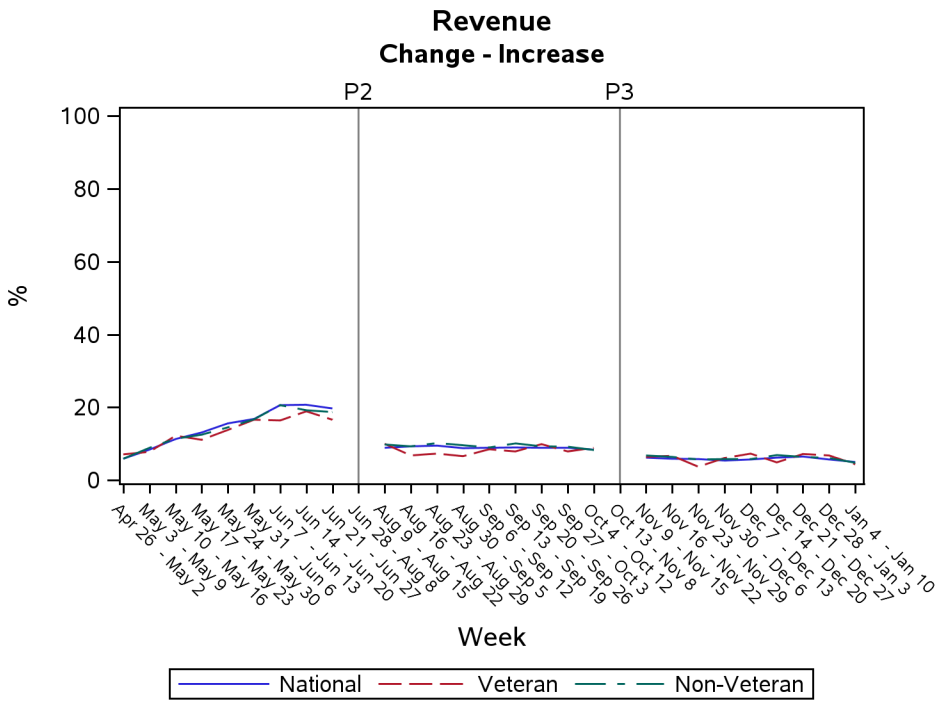

Overall
Large Negative Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran

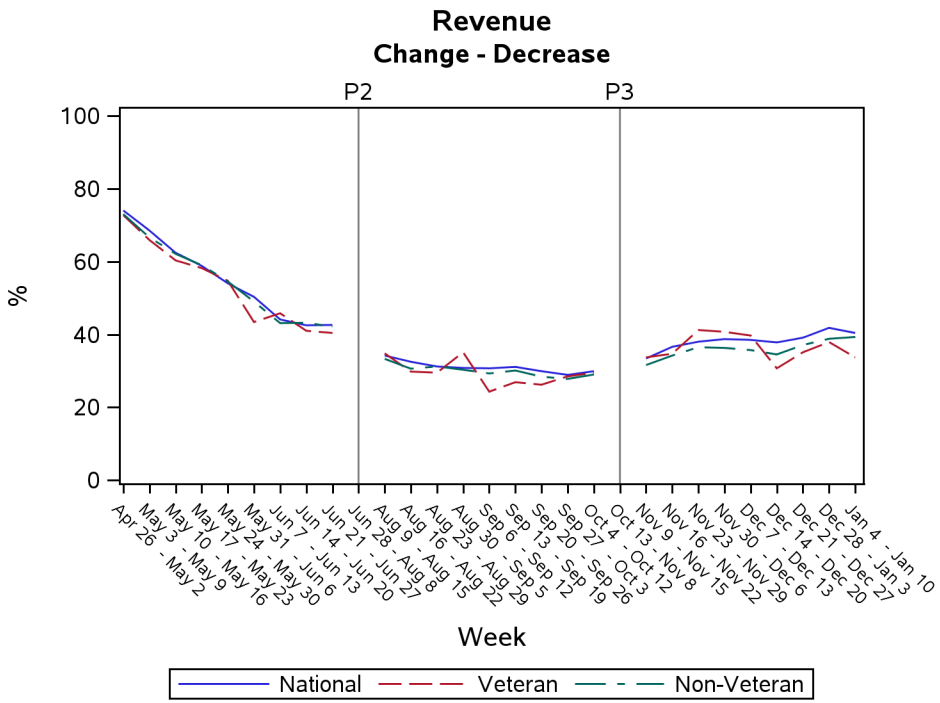

Overall
Moderate Negative Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran

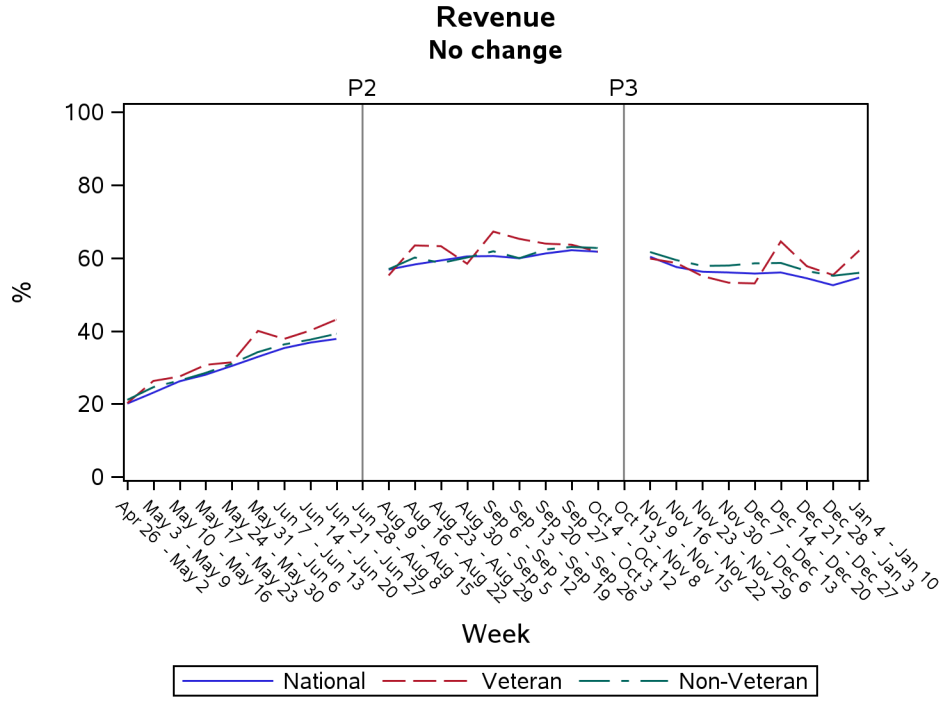

Overall
No Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran

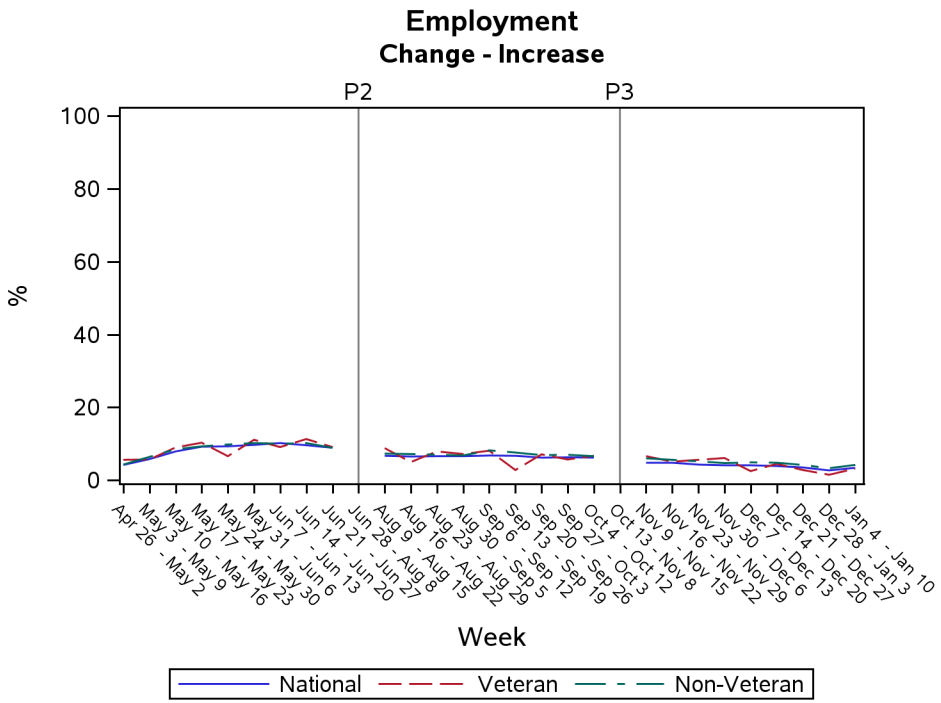

Overall
Moderate Positive Effect
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran

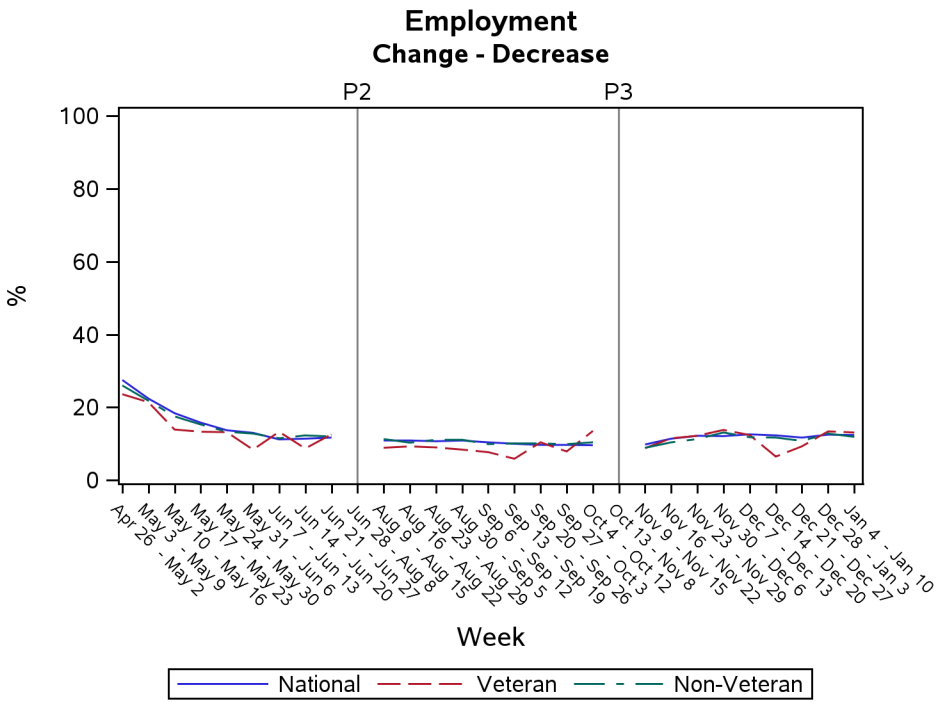

Overall
Large Positive Effect
P2
P3
100
80
60
40
20
0
%
Apr 26 - May 2
May 3 - May 9
May 10 - May 16
May 17 - May 23
May 24 - May 30
May 31 - Jun 6
Jun 7 - Jun 13
Jun 14 - Jun 20
Jun 21 - Jun 27
Jun 28 - Aug 8
Aug 9 - Aug 15
Aug 16 - Aug 22
Aug 23 - Aug 29
Aug 30 - Sep 5
Sep 6 - Sep 12
Sep 13 - Sep 19
Sep 20 - Sep 26
Sep 27 - Oct 3
Oct 4 - Oct 12
Oct 13 - Nov 8
Nov 9 - Nov 15
Nov 16 - Nov 22
Nov 23 - Nov 29
Nov 30 - Dec 6
Dec 7 - Dec 13
Dec 14 - Dec 20
Dec 21 - Dec 27
Dec 28 - Jan 3
Jan 4 - Jan 10
Week
National
Veteran
Non-Veteran

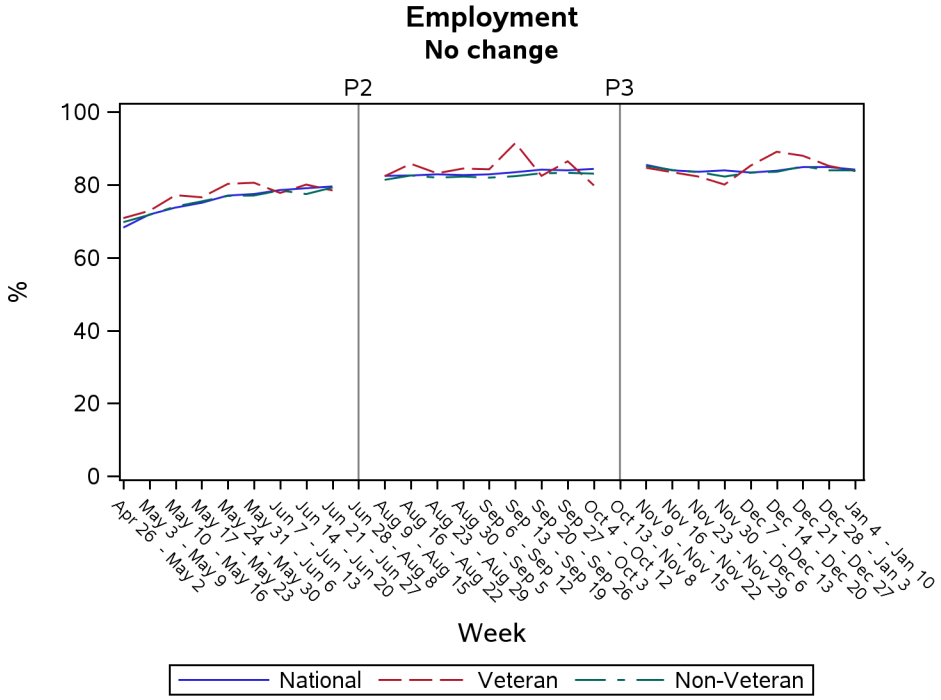

Revenue
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran

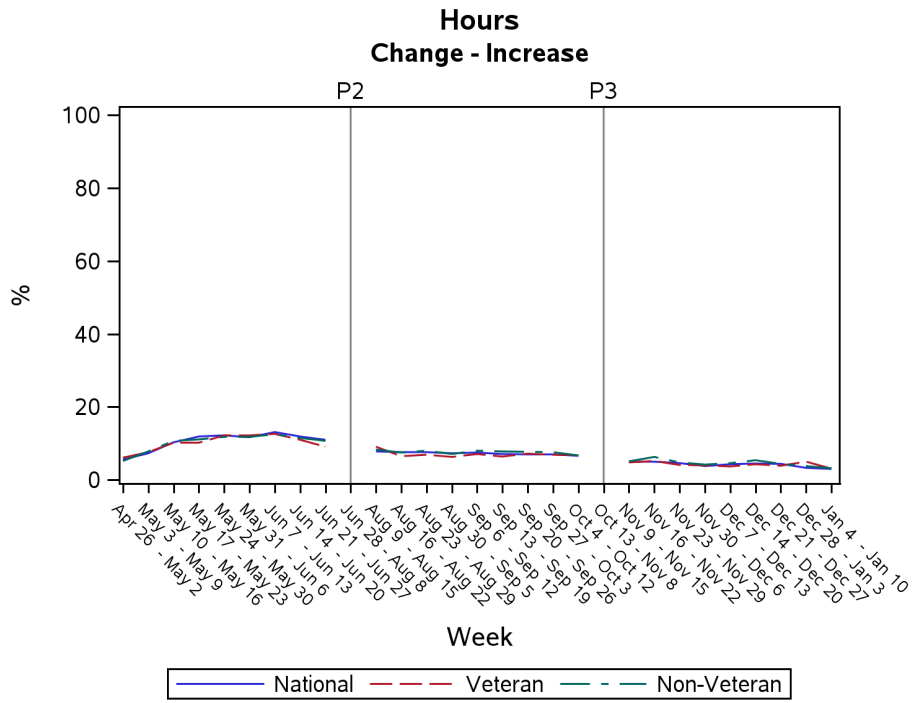

Revenue
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran

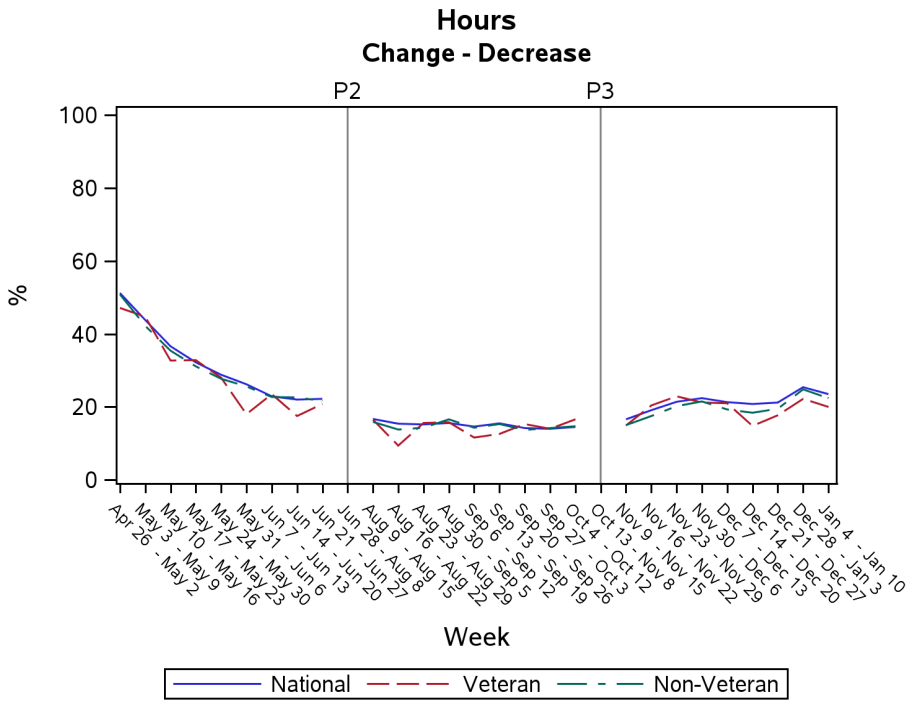

Revenue
No change
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran

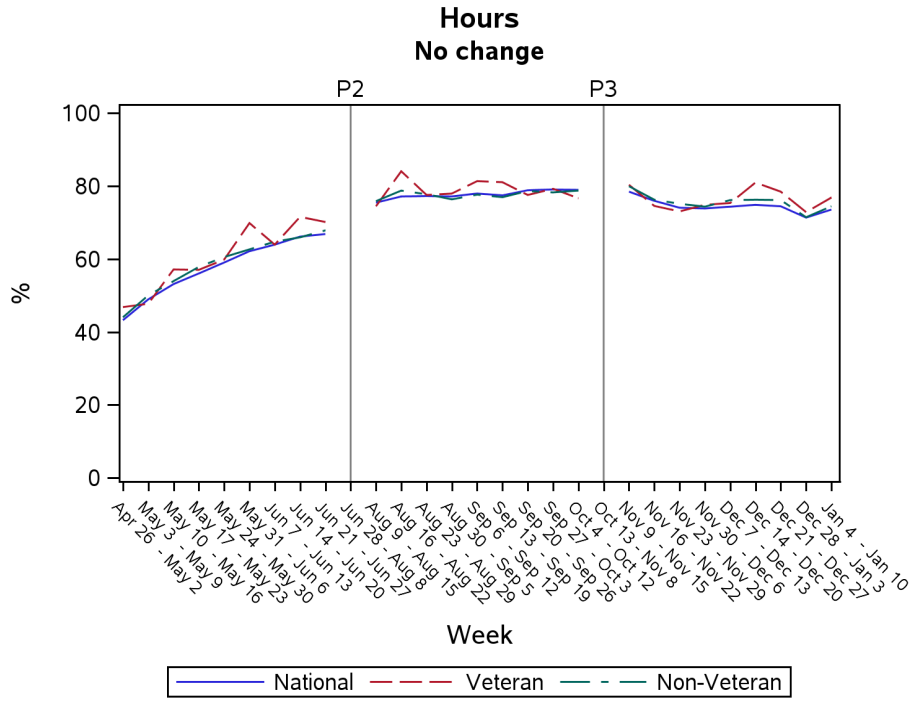

Employment
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran

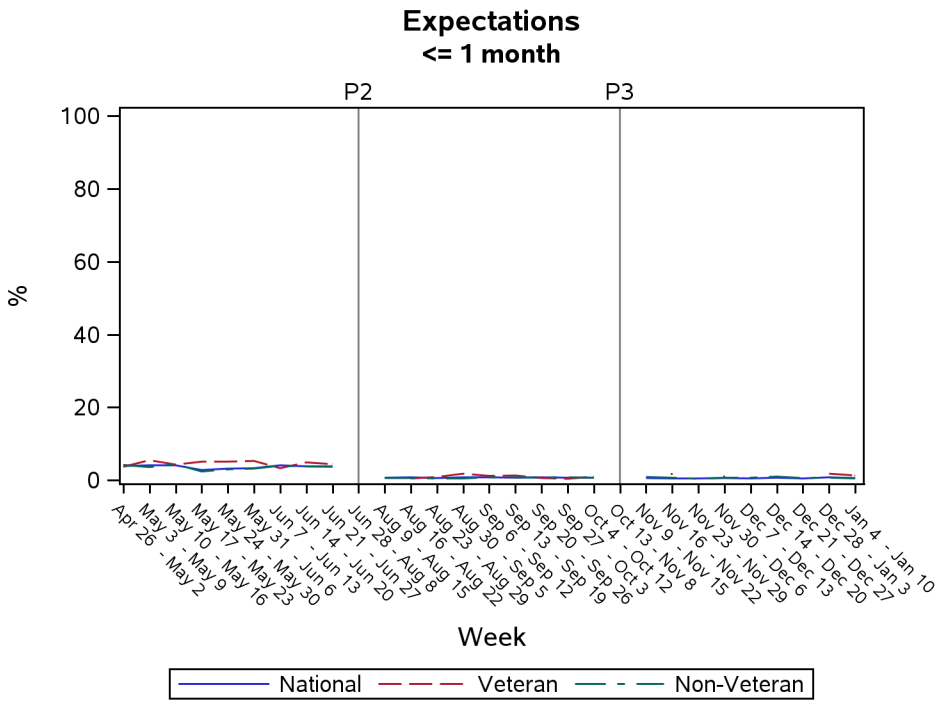

Employment
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran

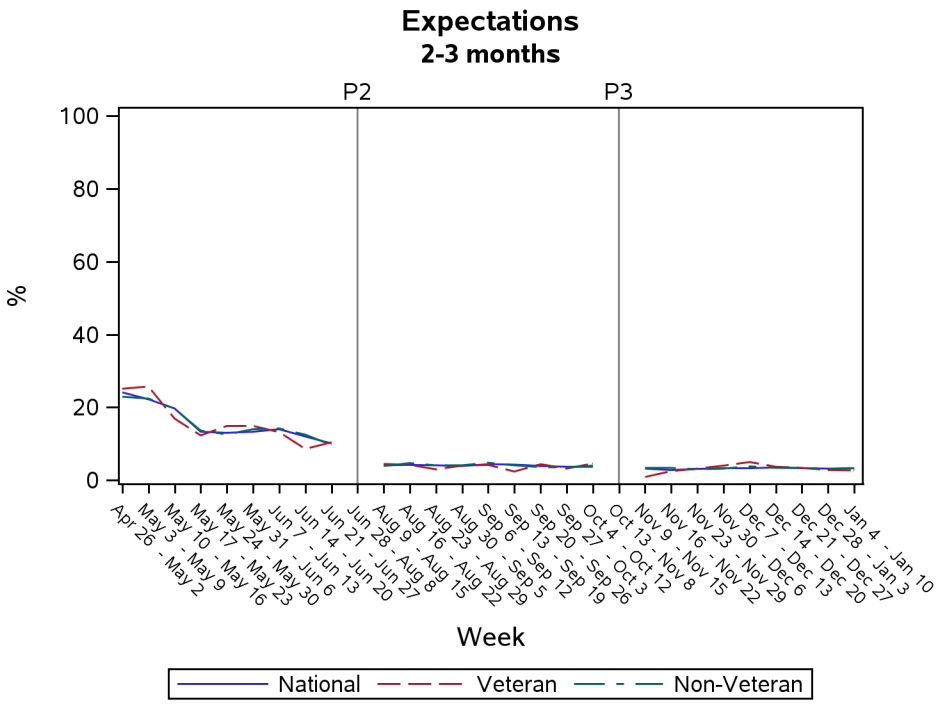

Employment
No change
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran

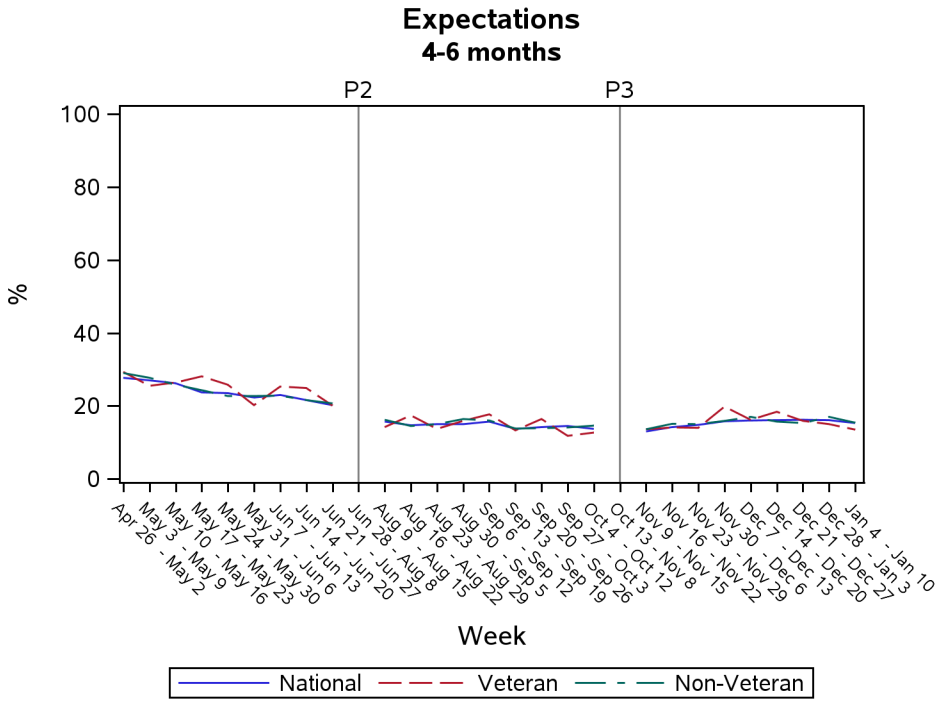

Hours
Change - Increase
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran

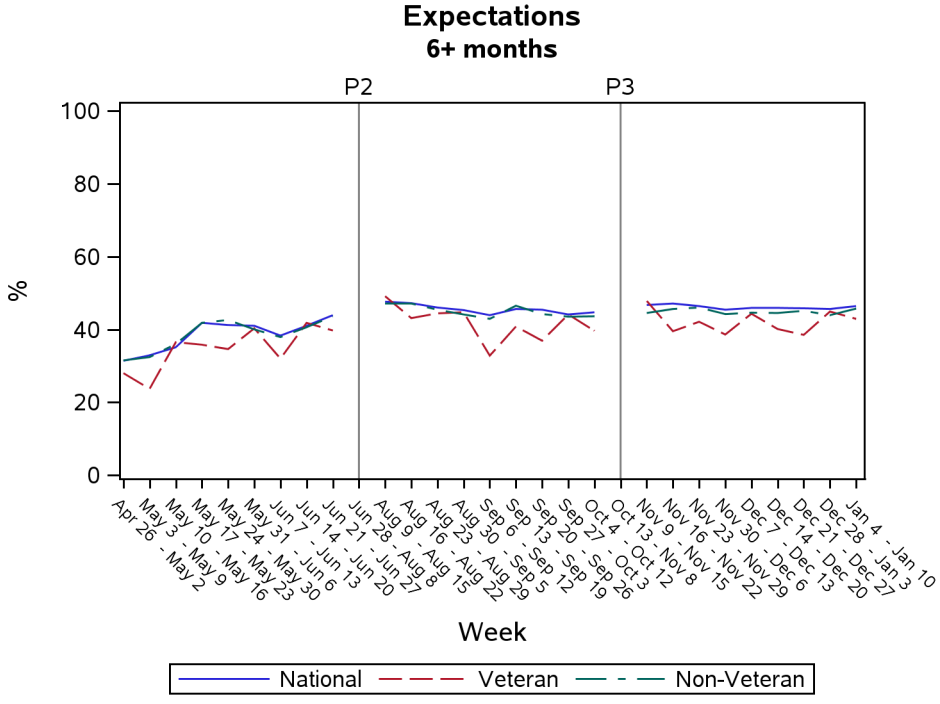

Hours
Change - Decrease
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran

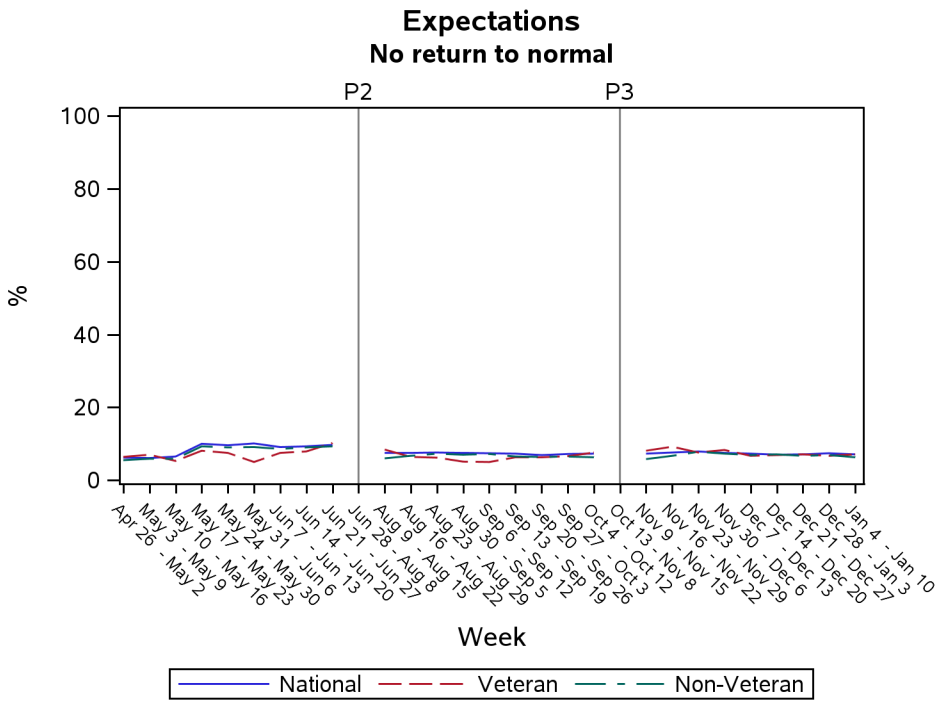

Hours
No change
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran

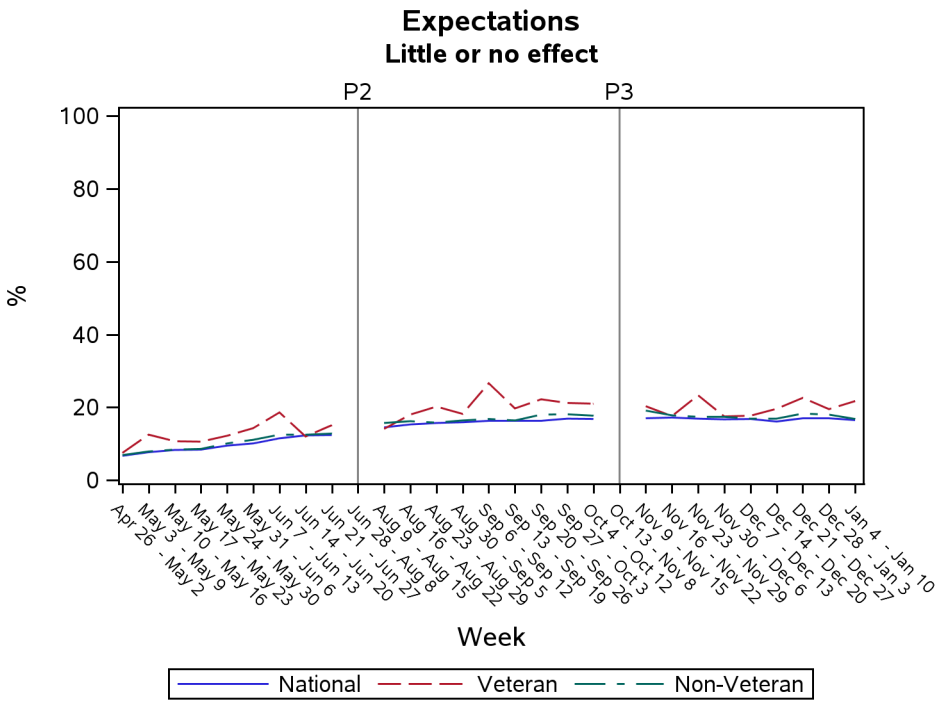

Expectations
<= 1 month
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran

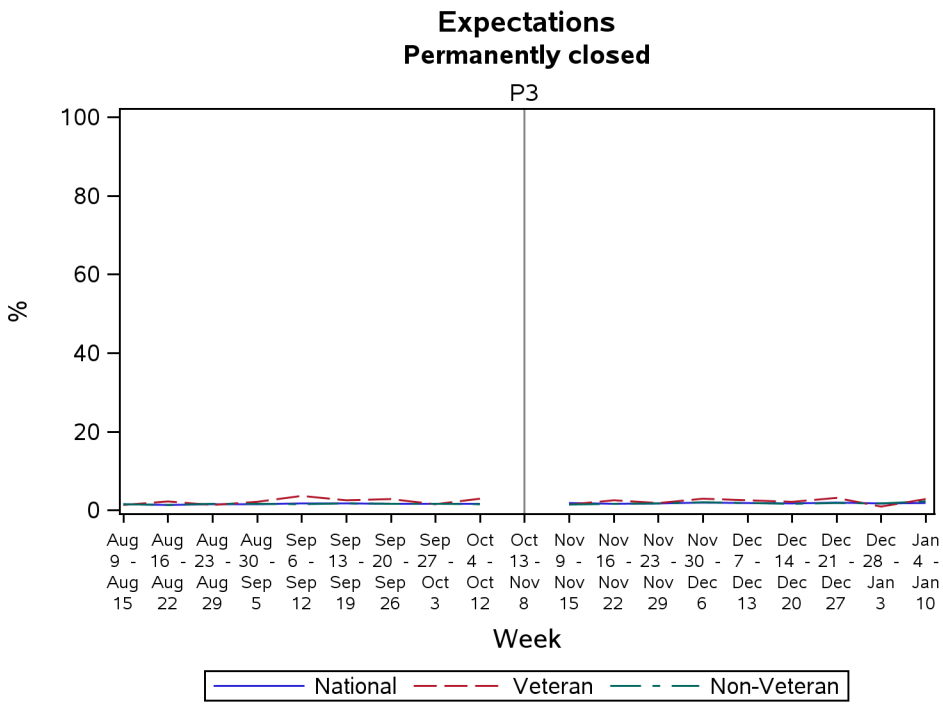

Expectations
2-3 months
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran

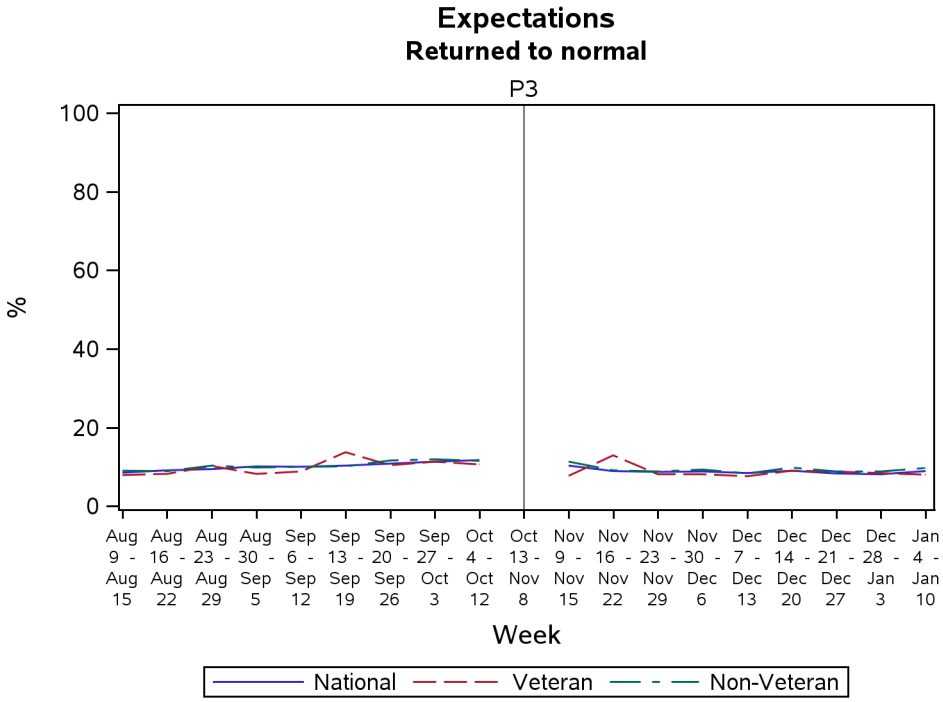

Expectations
4-6 months
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran


Expectations
6+ months
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran


Expectations
No return to normal
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran


Expectations
Little or no effect
P2
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran


Expectations
Permanently closed
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran


Expectations
Returned to normal
P3
100
80
60
40
20
0
%
Week
National
Veteran
Non-Veteran

Appendix C. User Guide for Published Research Estimates

When comparing estimates between different classes of matched SBPS respondents, it is important to note that differences between estimates across classes of businesses (e.g., rural and urban) may not be statistically significant. In order to determine if the difference between two estimates are statistically significant, a user of the SBPS may use the survey estimates and standard errors provided in the download files to construct confidence intervals.

Consider rural estimates for the first question of the SBPS in Phase 1. Question 1 asks about the overall experience of small businesses during the pandemic; response 1 indicates a large negative effect was reported by businesses. For rural businesses, the estimate is 42.9% for "Large negative effect" with a standard error of 1.76. For urban businesses, the estimate is 52.6% for "Large negative effect" with a standard error of 0.4.

The following can be used to test whether differences between estimates are statistically significant. The difference between estimates is calculated as:

$$\hat{d}_{ij} = \hat{X}_i - \hat{X}_j$$

where $\hat{d}_{ij}$ is the difference between estimates $\hat{X}_i$ and $\hat{X}_j$. The measure of error or MOE for a 90% confidence interval on the difference is approximately:

$$MOE\left(\hat{d}_{ij}\right) = 1.645 * \sqrt{\sigma^2(\hat{X}_i) + \sigma^2(\hat{X}_j)}$$

where $\sigma^2(\hat{X}_i)$ and $\sigma^2(\hat{X}_j)$ are the variances for $\hat{X}_i$ and $\hat{X}_j$, respectively. The variances may be approximated by the square of the standard error for the estimates. A 90% confidence interval for the difference is used to determine whether the difference is significantly different from zero at the 90% confidence level. If the interval includes zero, the difference is not significantly different from zero at the 90% confidence level.

$$\hat{d}_{ij} \pm 1.645 * \sqrt{\sigma^2(\hat{X}_i) + \sigma^2(\hat{X}_j)}$$

The difference between the urban and rural estimates in the example given above is:

$$\hat{d}_{urban\,rural} = 52.6\% - 42.9\% = 9.7\%$$

The MOE is calculated as:

$$MOE\left(\hat{d}_{urban\,rural}\right) = 1.645 * \sqrt{(1.76)^2 + (0.4)^2} = 2.97\%$$

The 90% confidence interval for the difference is

$9.76\% \pm 2.97\%$ or [6.79%, 12.63%]

Because the interval does not include zero, we can state at the 90% confidence level that difference between the rural and urban estimates is significantly different.